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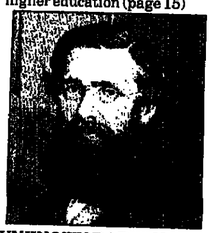

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TIMES PAST — THE TIMES

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The Great Debate

A post-Robbins mould?

The universities today face a clear choice that is also a cruel dilemma. The choice is whether to revert to the more relaxed but also more liberal role typical of the 1960s and 1970s or to hold to the tougher, more élitist and more "relevant", role which they have adopted with different degrees of willingness since 1981. The dilemma is that if they follow the latter course, which both Government rhetoric and their own deepest academic instincts may suggest, they run the risk of substantial contraction; if they follow the former course they will find it much easier to beat the demographic blues.

This choice and dilemma can be developed into two rival scenarios for the development of higher education up to the end of the century. The first goes something like this. Many universities have benefitted from the shock of 1981 in two respects; the restriction on student numbers, particularly in the "weaker" universities, has meant that marginal students have been turned away; and research priorities have been tightened up partly because of the general prejudice in favour of "relevance" ("what is good for General Motors. . ."), partly because of special programmes like that for information technology. The implication is that some of the students admitted by universities up to the late 1970s are better off in polytechnics and colleges because they are better taught there and because they clutter up universities with, to pinch a contemporary phrase, a long tail of low achievers.

Here there is likely to be a conflict between public positions and private views. Many people in universities will indignantly reject any suggestion that they identify with such an interpretation. Their motives for doing so will be mixed. Some will remain entirely and genuinely committed to the liberalism of Robbins; others will naively argue that universities should never be asked by any Government to trade between quality and quantity; others again will have a sharp tactical eye for the covert competition offered by the polytechnics and colleges with their lower unit costs and more popular and flexible patterns of teaching.

Yet scratch the surface and a different picture of university prejudices emerges. It is easy to find many people who believe that university X badly hit by the UGC cuts in 1981 is now a better institution because the quality of its (reduced) student intake has improved or that university Y has been able to use the restructuring fund to get rid of dead wood and so raise the quality of its academic staff, or to discover department after department which has watched with satisfaction as the average A level score of its candidates has crept up. One feels little surprise at the rumours that the University Grants Committee gave a cool reception to its own continuing education working party's report. It seems difficult to deny that there is a conservative undercurrent of university opinion which believes they had got a bit flabby in the 1970s and are now stronger and tauter institutions.

But there is a catch. If universities hold to this view, they cannot poach polytechnic and college students when the demographic dip comes in the early 1990s. For to do so would mean taking back those "marginal" students they were so happy to see the back of 10 years before; privately if not publicly. On the other hand, if poaching is to be the universities' inevitable strategy because the instinct for institutional and sectoral self-preservation will be too strong, then their commitment to the new academicism will appear very shallow.

The second scenario is for the universities to reject their recent past. This would imply that they genuinely regretted the temporary necessity to turn away less well qualified candidates – and not simply because this restriction on student numbers went hand-in-hand with damaging cuts or weakened the sectoral predominance of the universities, but out of a deep rooted conviction that these students could benefit fully from a university education. If the universities take this line they can make a strong case for keeping up their numbers in the 1990s by poaching polytechnic and college students. Then the burden of contraction would fall on the non-university sector. But the universities would have not only to welcome back that tail of students which they had chopped off between 1981 and 1984 but also to take continuing education seriously for the first time. So their comparative safety from demographic decline would have to be brought by some derogation of traditional academic standards.

In the real world of political choices the neat dichotomy between these two scenarios will disappear. The performance is never like the play. In the first place the Department of Education and Science itself will have to choose between two traditional policies. One is to regard the universities as an élite sector, a view implicit in the binary policy itself. This would suggest that the DES should encourage the universities' post-1981 academicism. The other is to regard the polytechnics and colleges as the flexible sector to be expanded or contracted at will against the background of a relatively stable university sector. This would suggest that the DES should tolerate if not encourage poaching by the universities. So the DES will be in a quandary.

Then there are even more practical considerations. Polytechnics and colleges have lower unit costs than universities (at any rate until the UGC gets to work on the creative laundering of research and teaching elements in the recurrent grant!). So it may be in the Government's interest to take advantage of demographic decline to give the non-university sector a larger share of the total student population. On the other hand the "market" of student preferences will in most cases favour the universities.

Another even more practical consideration is the narrow limits of political feasibility. Because of popular conceptions of relative quality that are fully shared by ministers, it would be almost impossible for any Government to allow a university to close while permitting a neighbouring polytechnic or college to remain open. So in practice the DES may be as boxed in as the universities. Just as their commitment to tauter standards may evaporate in the face of the pressing need to keep up student numbers, so any official patronage of the non-university sector may count for very little when the real decisions about contraction and closures have to be taken.

This is the strategic background to the UGC's great debate. For it is only when the placing of the universities within higher education has been fully discussed that many of the committee's questions acquire any solidity. This is especially true of the questions that relate to structure, whether the national government of higher education (questions 27 and 28), the distinctiveness of the universities (questions 14 to 18), or the future organization of the academic profession (questions 19 to 22).

The endemic confusion surrounding the proper placing of the universities within the total system emphasizes just how urgent it has become to develop a national plan for higher education. Until this is done – and it can only be done by establishing a proper national commission – nothing much else can happen. Yet the UGC is adopting a curious attitude. It has launched a detailed debate which helpfully but rather imperialistically embraces all higher education. But it keeps the National Advisory Body at arm's length and shies away from the need for stronger national coordination.

The UGC seems to be hoping (naively) that the universities will always come out on top in the present mixture of muddle and expediency that passes for a national system of higher education because they have the stronger cards to play. The committee therefore is pushing ahead with its detailed plans on research earmarking, on a tiered university sector, on mergers and/or closures against the shadowy background of a reiterated university hegemony within the total system. It won't work.

The DES, covetous of its traditional role as the creaking hinge between the two sectors of higher education, is equally but more logically reluctant to strengthen the machinery of national planning. Civil servants fear the loss of bureaucratic leverage; ministers fear the erosion of their privileged prejudices by informed scrutiny. But other Government departments may see things differently and prefer coherent planning to expedient chaos.

This chaos makes it difficult to frame sensible answers to the UGC's questions on the nature of the universities. These boil down to two. Are universities different from polytechnics and colleges? And, should there be more variety among universities? The universities could just about make a plausible case for answering "yes" to the first if they showed themselves to be genuinely committed to the new post-1981 academicism. But the case for their being some essential difference between university and non-university forms of higher education would crumble immediately if the universities unilaterally enlarged the catchment area for the former from, say, 55 to 75 per cent of the total to cope with demographic decline.

But if higher education is regarded as a spectrum of institutions rather than as two discrete sectors the case for overall planning is very much strengthened. And within the universities the case for answering "yes" to the second question, which opens the door to a tiered university system, is also reinforced. For if there is no essential and fundamental difference between universities and the rest it hardly makes sense to treat all universities alike as a privileged lump. If, on the other hand, there are accepted to be transcendent qualities that all universities share then the case for equal treatment is more convincing.

Similar ambiguity shrouds the UGC's question on the future of the academic profession. If universities stick to the new academicism, with all the consequential dangers of contraction, the arguments for more "new blood" and against meddling with tenure would be strong. Both could be fully justified within a tauter university system very much committed to research and high-quality teaching. But within a rather looser and more liberal system such as might be produced by significant poaching of polytechnic and college students?

The UGC's present, and past, approach to all these issues is rather crabwise. But its direction seems fairly clear. It is towards significant stratification of the university sector, with a research-oriented minority in which the new academicism is maintained (and so enjoys tenure, "new blood", and all the other goodies of the privileged) and a teaching-oriented majority that battles with the polytechnics and poaches their students (and so cannot be allowed to enjoy all the traditional perks of being a university).

The other approach is to try to produce a public and a sophisticated plan for all higher education, most probably through the medium of a national commission that overarches both the UGC and the NAB. Perhaps this plan could be embodied in a Higher Education Act, which would provide a proper statutory foundation for future development. Un-British as such an approach might be, it would at least be a novelty.

Next week: the limits of hierarchy

Laurie Taylor

(Edinburgh University has been making telephone appeals for funds to former graduates. . .THES, May 1984)

Hello. 6–1–3–7–0–2.
Now then, how would you distinguish between "syntagmatic" and "paradigmatic" relations?
I'm sorry. This is 6–1–3–7–0–2.
Langue and parole. Quickly now.
What's the difference? I'm waiting for an answer.
I think there must be some mistake. This is 6–1–3–7–0–2. Who did you want to speak to?
Come along, Noakes. What's the matter with you? Don't you remember the good times we had in Seminar Group 14. *Sign and signified? Wine and Sapir?*
Why, it's. . .
That's right. Professor Lapping.
Good heavens.
How are you, Noakes? How are you?
Yes, how are you indeed?
I'm. . .erm. . .well, thank you, Professor Lapping. Can't complain. Still looking for a job, of course. But otherwise, fine.
Gordon.
What's that?
My name, Noakes. *Gordon Lapping.* "Gay Gordon". Oh yes, don't think I didn't know. "Gay Gordon". Oh yes, jolly good. Now look here, Noakes. Let me first of all say "well done". All of us here in the department thought your lower second was one of the best we awarded in 1979.
Really.
Oh yes. I was only talking the other day to Dr Piercemuller and he was saying: "I wonder what happened to that nice chap Noakes." And I said: "Oh you mean that splendid fellow who was so popular with staff and students."
Thank you, sir.
Not at all. Look, Noakes. Do you yourself ever look back in that spirit way and think about the old place you left behind?
Which "old place", sir?
The *university*, Noakes. *The university.*
Ah.
D'you ever think of all the good times you had there? The intellectual cut and thrust of the seminars; the jolly of the students union; the rows over ancient books in the library; the venerable professors at senate; the indefinable sense of being a small part of an academic tradition which stretched back to 1961?
Well, I. . .
Because if you do, Noakes – and I hope by playing this lovely record of the university song. . .*Postera Crescam Laude . . . remember . . . Ever and ever my after fame shall grow. . . Da-da-da-da-dum-dum-dum. . .* – if you ever want your children's children to enjoy the privileges that you yourself enjoyed . . . *Da-da-da-da-dum-dum-dum. . .* place your hand in your hand in your wallet now. . . take out ten pounds. . . and sent it straight away to me. . . that's *Professor Lapping. . . The Appeal Fund. . . Box 101.*
But, sir. . .
And just one last thing, Noakes, while I'm speaking to you, just a little personal sideline, you'll understand, a hedge against compulsory retirement. . .
Yes, sir?
Have you ever considered, Noakes, that you might be underinsured?

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The Times Higher Education Supplement

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Cafeteria-style scheme planned for London

by Maggie Richards

A five-year experiment in cafeteria-style degrees which allow students to split their studies between universities, polytechnics and the Open University, is being planned for London.

This transbinary experiment would be aimed at older students, whose prior learning experience could allow them exemption from parts of degree courses. All the London polytechnics and London, City and Brunel universities are likely to be involved. Participation by the OU would also allow students to take advantage of distance learning for sections of their degrees.

A working party at the Council for National Academic Awards has been finalizing details of the scheme since the autumn. Its recommendations are to be put to the CNAA academic policy committee in June, and if accepted they will go before the full council for approval in July. The scheme would then become fully operational in time for the beginning of the 1985 academic year.

Among members of the working party were two representatives from the OU, which already has an agreement on credit transfer with the CNAA.

A member of the academic staff of London University also attended meetings in a personal capacity, but has been relaying the findings back to the university. The Master of Birkbeck, Professor W. G. Overend, was also a member of the working party.

Details of the scheme were revealed by Dr Edwin Kerr, CNAA chief officer, at a Policy Studies Institute conference on adult experience and prior learning. The conference was given examples of similar ventures taking place in the United States.

The conference was also told of small-scale experiments already taking place in London, but the CNAA proposal would mark the first major trial to be undertaken in Britain.

London has been chosen for the experiment because of the high concentration of institutions in and around the city. But the CNAA has not ruled out the possibility of extending the scheme to other areas before the end of the five year period if it proves overwhelmingly successful and if other institutions express an interest.

Under the terms of the pilot scheme the CNAA would become the registering body for students wanting to split their studies between various institutions, and arrange with the institutions for admitting of students.

Initially, the scheme will be restricted to mature students – classified by the CNAA as those over 21. But younger students might be admitted under special circumstances.

Discusssions are being initiated with the Department of Education and Science to overcome the problem of grant allocation. At present students are awarded a grant to study specifically at one institution.

The working party has recognized that counselling will be an important factor for students contemplating joining the scheme. It has suggested that students should be encouraged to use the counselling systems already in existence and does not envisage the creation of a new counselling service.

The working party is also hoping the CNAA will recognize the value of students previous learning experience by permitting assessment and then accepting prior learning as a contribution towards degree status.

If the scheme is accepted by the council in July a publicity campaign will be mounted to inform academics and ensure that students are aware of the opportunities.

Announcing details of the scheme to the Policy Studies Institute conference, Dr Kerr said: "I hope the CNAA will be flexible enough and willing to join in such experiments."

At London University, Dr William Taylor, the principal, said this week: "We aware of the proposals for a pilot scheme in the London area. We will be waiting to hear formally from the CNAA. Then we will be interested to discuss whatever possibilities are raised."

Summit united over two-year 'non-starter'

The first ever meeting of members of the University Grants Committee with their counterparts from the National Advisory Body too place this week, the two groups exchanging *information on their parallel inquiries into the future of higher education.*

The meeting was not intended to produce proposals but it became clear that the consultation exercises had revealed general hostility to the introduction of two-year degree on both sides of the binary line. While nothing was ruled out, it was said later that the idea now appeared a non-starter.

An official statement from the UGC said only that the meeting had considered academic issues of common interest. These included questions of access, the effect of the sixth-form curriculum on student demand for higher education, the nature of demand from mature students, the problems of assessing the future size of the student population and a preliminary discussion on what provision might be needed in the 1990s.

The meeting was attended by the *executive secretary of the Wales Advisory Body, as well as by members of the board of the NAB and members of the UGC. There is to be a further meeting next month, when questions of resources, transbinary links and research will be discussed. Further meetings will be held if necessary before advice to the Secretary of State is formulated in the summer.

The first summary of responses to the NAB's exercise was circulated at this week's meeting, which was chaired by Sir Peter Swinnerton-Dyer, chairman of the UGC. The deadline for responses to the UGC does not pass until the end of the month.

UGC responses, page 4

The Common Market's academic cloister, 11

Stricter controls urged for exams

by Ngaio Crequer

Stricter controls on how universities examine their students and choose examiners are proposed in a confidential code of practice being considered by vice chancellors.

The report is the work of the academic standards committee set up by the Committee of Vice Chancellors and Principals last year after Sir Keith Joseph, Secretary of State for Education and Science, asked the universities to see if quality could be improved.

The committee, which is chaired by Professor Philip Reynolds, vice chancellor of Lancaster University, is also going to consider changes in the university peer review system, accreditation of degrees by professional bodies, methods and procedures for the supervision of postgraduate work, and internal validation of courses.

The draft says no degree should be awarded without participation in examining by at least one external examiner. In the case of London and Oxbridge, they need only be external to the college.

Only persons of sufficient seniority and experience to be able to command authority should be chosen, normally at professorial level.

No individual should have more than two external examinerships, to have time for proper peformance of duties. An examiner should not be appointed from a department in a university where a member of the inviting university department is an examiner.

Former members of staff should not become external examiners for three years, or before students taught by them have passed through the system.

An external should be present at all examiners' meetings when significant decisions are taken, such as setting papers. All draft degree papers should be seen by them, and they may set questions or complete papers.

They should have a right to see all scripts, and should normally be sent borderline cases. They should be able to see anything that contributes to degree classfication.

External examiners must sign degree lists to show they accept classifications. Comments made by externals on the course, curriculum and assessment should be discussed by the department, and explicit decisions made about whether to make changes. They should be encouraged to make annual reports, which should go to the vice chancellor.

The draft will be considered by the main committee of the CVCP next Friday.

CNAA countdown to quality advice

by Karen Gold

The Council for National Academic Awards has set out a timetable for creating a permanent quality advisory service for the National Advisory Body.

In a statement sent to all British institutions associated with CNAA, the council says its first step will be to meet the NAB and discuss what the two bodies' future relationships might be.

The CNAA will then produce a consultative document, probably including possible models of advisory machinery, to be sent to all institutions for the begining of the summer term. It can then be discussed by academic boards during that term, and come back to the council for its July meeting.

In a series of conciliatory points, the statement says that any quality advice sought by the NAB before that timetable is complete will only be given through special machinery separate from the council's validation machinery, and after consultation with the institutions affected.

Three issues still have to be decided: how giving quality advice can be reconciled with the CNAA's current courses review and validation; what is meant by quality and how it can be judged; and what are the appropriate ways of formulating and conveying advice to the NAB.

The council says that it has not fully thought out the answers to these problems, that validation and review visits to institutions will still be for baseline validation not comparative quality; and that on past experience the NAB may not ask for comparative quality advice very often anyway.

CERN inquiry to go ahead as budget pressure mounts

The inquiry into British membership of the European Nuclear Research Centre (CERN) in Geneva is to go ahead, with the withdrawal of the UK's £30m subscription being considered as a long-term option.

Full details of the inquiry, to be conducted jointly by the Advisory Board for the Research Councils and the Science and Engineering Research Council, were to be announced yesterday to coincide with publication of the ABRC's report on the 1984/85 science budget.

The heads of research councils are already setting the tone for this year's science cash negotiations with the Department of Education and Science by warning that they cannot support new work without new money. The documents published this week show that ABRC chairman Sir David Phillips told Sir Keith Joseph, Secretary of State for Education, of the possibility of withdrawal from a major area of science as long ago as last April.

This warning accompanied the list of scientific opportunities the ABRC sent to the DES early last year to bolster its case for more money before the detailed public expenditure discussions.

Sir David wrote to the Secretary of State again last September to reiterate the arguments before the final budget level was set. He said then there was an urgent and overriding need for additional funds for science in the years ahead for new scientific opportunities, to help speed redeployment of existing funds, and to meet rising costs. Sir David stressed that possible new work in cosmology, cancer research and artificial intelligence is both scientifically exciting and potentially "exceptionally fertile for new technology". But he foresaw "extreme steps" if money for new ventures had to come from existing allocations.

Following the decision not to increase the science budget this year for new work, the ABRC's advice discussed two areas which might be abandoned – the "big science" fields of satellite-based astronomy and high-energy particle physics, in spite of recent spectacular successes at CERN, because it has fewer immediate connections with other fields, and offers little prospect of practical applications.

Discussions on the form of the inquiry involved other Government departments because, as the ABRC says, withdrawal from CERN would have serious diplomatic and economic consequences. The ABRC also fear that withdrawal would harm efforts at international collaboration in other areas of science.

ABRC priorities in detail, page 3

letters to the editor

Student assessment and data protection

Sir, – As a lawyer, I have been following with great interest the Committee of Vice Chancellors and Principals' recent attempt to gain legal backing for its current restrictive practice of withholding assessment information from its students. Under the CVCP's proposed amendment to the Data Protection Bill a student need not be told how he is progressing in his studies. This practice, which is clearly a breach of contract under the present law, would be given the seal of legal approval if the amendment were to be passed. The CVCP's proposal seems to be an attempt to create a completely new category of legally privileged documents.

A university enters a contract with its student to provide tuition. Teachers are, if you will pardon the expression, paid (by, or on behalf of, the student) to teach, not to remain silent. A university is therefore under a contractual obligation to tell the student how he is progressing. The proposed amendment to the Data Protection Bill would conflict with this obligation since it could, for example, abrogate a supervisor of his duty to warn a postgraduate student that in his role as examiner he will fail the very work which he himself has supervized and approved for submission. The student could be denied access to the usual preliminary supervisor's reports on the progress of his work.

It is common practice for the universities to withhold such assessment evidence at present, as many students have found to their cost. There is, however, no legal backing for such secrecy. The categories of legally privileged information clearly do not include such documents. The subject access provisions of the Data Protection Bill are designed to assist those who might be damaged by the data held on them, or by its accessibility or distribution to others. There is no way in which keeping assessments secret from the students about whom they are made can help them. Indeed, the potential harm of not releasing such information far outweighs any administrative inconvenience which might be caused to the institutions concerned.

Assessments which are made and "adjusted" in secret cannot be easily verified, and errors may pass unnoticed. Let us suppose that a student has reason to question a grading, for whatever reason. The universities would, by the amendment, obtain legal backing for their current unlawful practice of concealing the evidence on which that grade was based. Thus the student would be effectively prevented from seeing and/or challenging the assessments made about him or his work.

There need, of course, be no such administrative inconvenience if students were always kept fully informed of their progress and given adequate and regular feedback on their work. One must ask why the universities seek to adopt such unsound educational principles of secrecy in the first place, before asking whether or not there is a need to save their administration departments the inconvenience of telling their computers to print out the assessments on a student after the event.

Yours sincerely,
P. J. HAWKINS,
Senior lecturer in law,
for Reform University Law and Educational Standards,
64 Beford Court Mansions,
Bedford Avenue, WC1.

Sir, – I am very disturbed by your report (*THES*, February 24) that the Committee of Vice Chancellors and Principals is lobbying MPs to gain an exemption from the proposed Data Protection Act. You quote the secretary of the CVCP as claiming that release of exam grades to students would "lead to confusion" and "undermine the authority of examiners' boards".

The concern of the CVCP seems to be that exam grades may be modified by taking account of personal and other factors. In effect, therefore, they are saying that students should have no right to be told the extent to which factors, other than their exam performance, have contributed to their final assessment. Yet it is surely this very kind of unaccountability which the new Act has been designed to prevent, and I find it sad that the universities are not prepared to set a better example.

I have also a more immediate personal concern. Part of my job as a university teacher is to discuss with students the theory and practice of assessment and examinations in schools and elsewhere. One particular issue is the idea of equity in assessment, where one of the basic assumptions is that the procedures used are available for inspection and analysis. If the CVCP has its way, it looks as if I could find myself in the position of being required to deny my students those opportunities, which they were being rewarded for advocating in their own examination answers.

Yours faithfully,
HARVEY GOLDSTEIN
Chairman of the department of mathematics, statistics and computing, University of London Institute of Education.

Youth training numbers

Sir, – The title of minister for unemployment clearly rests at present with Peter Brooke, but he may have a contender in Peter Morrison, minister of state at the Department of Employment.

Mr Morrison has defended the decision to reduce the Youth Training Scheme places in community based and training workshop projects from 89,000 to 70,000. These are the Mode B1 schemes for young people with special needs.

This has obviously caused great concern, so his reassurance to Parliament on February 21 was very welcome. He emphasized that "last year only 54,300 places were filled and we are hoping to approve 70,000 places next year . . . There is no need to worry about the trainees".

Not so. While 54,300 places were *occupied* at the end of December, more than this had actually been *filled* during the year – more than 63,000, in fact. Mr Morrison is sufficiently confused to have given the lower figure for both entry to and occupancy of the YTS.

The actual difference of 8,700 places is between snapshot figures and throughput figures, and it is crucial. It reflects the sizeable number of young people who have entered the YTS and then left, presumably to go to other opportunities. But those places are not now redundant. The YTS is a bridge from school to work, and some young people have clearly used it to good effect, so much so that by last December there were fewer of them actually standing on it than had entered.

But many more young people are still waiting to cross – in January 1983 there were 270,000 unemployed 16 and 17-year-olds, a figure which is down very little from January 1983, despite the Government's self congratulation about the YTS.

Mr Morrison also seems to be trapped in a time warp. The figures he gave in late February referred to December 1983. He appears to have been unaware that the figures for January 1984 were already publicly available nearly a month before his statement. They showed that there had been 71,200 entrants to Mode B1. By February this had further increased to 74,300. Can he still assure us that 70,000 places are enough to satisfy the trainees' needs?

If the effect of the minister's policies were not hidden in his own confusion he might see that the reality of the proposed cut is likely to be very painful indeed. Many schemes of proven quality have suffered even where there is a real evidence of need, and where there is no effective alternative. Schemes run by National Association for the Care and Resettlement of Offenders and the YMCA have been affected as many others have come to my attention from Dundee, Rochdale, Hull and elsewhere.

The same issue arises with Mr Morrison as it did with Mr Brooke. Did he knowingly mislead the House of Commons about how painful these cuts would be? Inconceivable. But then, did he not realise, and will he now alter course?

It seems that incompetence, among Government ministers is infectious – or perhaps it's just that the evidence to prove that incompetence is now becoming quite incontrovertible.

Yours faithfully,
BARRY SHEERMAN, MP,
Shadow Minister for Education and Training,
House of Commons, Westminster.

Liverpool fans

Sir, – In view of the recent adverse publicity surrounding our polytechnic, may we, as the chairmen of the seven faculties comprising the polytechnic, register our commitment to our polytechnic, our pride in its considerable achievements and our faith in its future. We wish to express our view that the current uncertainties affecting our institution, recently reported in your columns, are of a temporary nature and will soon be satisfactorily resolved.

We look forward to our polytechnic maintaining and even enhancing its place in the top flight of public sector higher education provision in this country.

Yours faithfully,
PETER MOSEDALE,
(Art and design),
JOHN NELSON,
(Business and management studies),
TOM CAIRNEY,
(Construction),
B. H. SWANICK,
(Engineering),
GEORGE SCANLON,
(Humanities),
W. HALE,
(Science),
ERIC WARD,
(Education)
Liverpool Polytechnic.

Research 'slur'

Sir, – It is quite appalling that any polytechnic director should slur academic staff with the accusation that the vast majority of research is done for personal advancement (*THES*, March 9). Dr Nuttgens should know that there is little scope for advancement in any part of academe now, and what few opportunities exist for promotion most often go to those who administer, not as a reward for research.

Research springs from curiosity and intellectual challenge. Any good teacher is continually rethinking his subject, which inevitably confronts him daily with sufficient puzzles and enigmas to fill a lifetime's investigation. Research is not, however, an "adjunct" or an "input" to teaching; teaching and research are part of the seamless web of commitment to ideas.

Yours etc.,
JULIAN NEWMAN,
4 High Street,
Swavesey,
Cambridge.

Letters for publication should arrive by Tuesday morning. They should be as short as possible and written on one side of the paper. The editor reserves the right to shorten or amend them if necessary.

Wrong site

Sir, – The current officers' report on the Inner London Education Authority's advanced further education review recommends "Extension of the provision for landscape architecture (education)". We welcome this. However, we are concerned about the proposed continuation of landscape architecture courses as part of the Joint School of Architecture and Landscape at Dartford, Kent. The ILEA officers propose leaving to the National Advisory Body the decision as to which London Architecture School (if any) should be closed. Meanwhile the ILEA officers propose expanding Dartford into a Centre for Built Environment Studies including the present School of Architecture and Landscape.

This chapter holds strong reservations about the Thames Polytechnic, Dartford campus as a place of landscape education for the following reasons:

1. Geographical: The Dartford landscape courses are the only ones in the south of England. There are 10 institutions of landscape education in the UK, seven in Scotland and the north, one school at Gloucester, a part-time course at Birmingham Polytechnic and Dartford. Dartford is as far from central London as Stirling is from Glasgow or Chester is from Liverpool. If there is to be just one landscape school in the south of England, it makes sense for it to be easily accessible by public transport and in central London. Many of this chapter's members north and west of London have found it easier to or preferable to travel to Birmingham Polytechnic than to cross London to Dartford.

2. Horticultural and ecological links: Dartford has no complementary horticultural, ecological, biological or agricultural courses. The major landscape schools in France, Holland, Germany, Sweden and the United States are more often than not associated with horticultural or agricultural institutions. Certainly the lack of such complementary links at Dartford are a grave drawback.

3. Computer studies: There are the most minimal of computer facilities at Dartford. The landscape architects of the US Forestry Service are equipped with 200 graphics terminals, as a landscape architect in private practice whose firm's largest office is in Hong Kong I am concerned to maintain my profession's international standing and competitiveness. The lack of advanced computer facilities at Dartford are a further drawback.

This chapter would like to see the Thames Polytechnic landscape architecture courses become a department in their own right and move to central London. We have recommended this to both the ILEA and the NAB.

Yours faithfully,
ROBERT HOLDEN
Chairman,
South East Chapter Landscape Institute.

Landscape and architecture students in the Dartford campus studio

NELP staff

Sir, – We were disturbed to read your account (*THES*, March 16) of what is happening at North East London Polytechnic. Perhaps I can present through your letters page *our* version of events.

First, through our joint union campaign (including a mass meeting of 500 union members at NELP, threatened sanctions of strike action and not marking exams) we have made it clear that *compulsory* redundancies are unacceptable. They have now been withdrawn.

Secondly, we were told repeatedly by the director and by Barking councillors that there would definitely be no more money coming from Barking. After a lobby of individual Barking councillors and a mass lobby of the council meeting, they have now agreed (along with Newham and Waltham Forest) to pay an extra £275,000. Clearly this is a victory for the unions at NELP. But it is only a *partial* victory.

As you rightly report, 64 (more than 10 per cent) of our academic staff are leaving next month and the educational consequences will be disastrous. The director's claim that "all these staff can be released without substantial damage to the academic fabric of the polytechnic" is plain nonsense, and does not say much for the work of those 64 staff! Who will be doing their work next term? Some faculties are losing a sixth of their staff and smaller departments will be particularly vulnerable. If we take a period midway through last academic year and compare it with the number of staff teaching mid-way through next academic year, there are likely to be 150 fewer teaching staff. And this must be seen in the context of an *increase* in students of about 500 next year.

The unions and employers (JBC) at NELP have written to Keith Joseph and Peter Brooke several times over the past five weeks asking them to receive a joint deputation and despite being promised an early reply, we have heard nothing. Finally may I comment on your misleading headline: "Staff rush to leave NELP". After four years of cuts when we have lost 300 non-academic jobs and 200 academic jobs, the pressure on staff has obviously increased dramatically with ever worsening conditions of service. This has led to demoralization and a lack of faith in the educational purpose of our work. On top of this, staff have been threatened and pushed into leaving, for instance by being told that if they did not go voluntarily, they would only get half so good a deal if they were made compulsorily redundant. A more accurate headline would be: "Staff pushed out of NELP".

Yours faithfully,
MARTIN HOYLES,
Secretary,
NELP Natfhe coordinating committee.

Economic view

Sir, – Your readers might have been appreciated Mr Flemming's review of my book, *The Conditions for Economic Recovery* (*THES*, February 24), had he cared to mention that the book is an attack on *monetarist* economics and its policy prescriptions. For reasons best known to Mr Flemming, even the word "monetarism" is completely omitted from the review.

Yours truly,
JOHN CORNWALL
Professor of economics
Dalhousie University,
Halifax, Nova Scotia.

Salary structure review offered

by David Jobbins

Chances of a rapid solution to the promotion blockage at the top of the lowest salary scale for college lecturers are receding in the current pay round.

Local authority employers have met union demands for automatic progressive from the Lecturer 1 to the Lecturer 2 scale with the offer of a full-scale review of the entire salary structure.

The National Association of Teachers in Further and Higher Education, whose negotiators last week rejected a 3 per cent offer, is to ask its 76,000 members to vote on industrial action to be taken if talks on its claim for a substantial percentage rise and automatic progression reach deadlock.

The union is bound by a decision of its special salaries conference to consult with the membership before proceeding further with pay negotiations if the L1/L2 claim is blocked.

Employers' leaders say that the current structure is anachronistic and leaves further and higher education vulnerable to competition principally in the area of vocational training.

They are not prepared to go into substantial detail about their plans, discussed three weeks ago but the leader of the teachers' panel on the Burnham further education committee, Mr John Pearman, said: "It is not a question of responding to Natfhe's concerns but rather that the employers are concerned that the present structure is in need of urgent review."

They feel that tackling specifics such as the L1/L2 problem and the claim for part-time staff, being pursued in the National Joint Council on conditions of service, should not be considered in isolation but in the context of the entire structure.

Lack of progress in the Burnham Further Education review group over the past two years is acknowledged, but they feel a new sense of urgency is needed.

The employers, challenged by union negotiators over the erosion of salaries since the Wood arbitration of 1980, pleaded poverty. They added that the 1.05 per cent increase in their contribution to the superannuation scheme would have to be met out of the rate support grant allocations which assumed only 3 per cent for salaries.

The unions say that 14.8 per cent is needed to protect standards of living and between 5 and 8 per cent for university staff to catch up with their university counterparts.

The 3 per cent was rejected by all the teacher organization including the Association of Polytechnic Teachers, but prospects of a substantially improved offer are slim. The employers are adament that neither the 4.5 per cent accepted by local government manual workers nor the same percentage being offered to Scottish schoolteachers can be taken as a benchmark.

Edinburgh University students' association has launched a film to guide school-leavers through the jungle of higher education. The 30-minute video, *This University Business*, was produced by Edinburgh's student television society on a £700 budget and will first be shown at the student association's pre-university conference, a three-day course for school-leavers during the Easter vacation.

OU considers efficiency study

An inquiry into efficiency at the Open University is being proposed by the Department of Education and Science, in line with studies being carried out in other universities.

The DES proposal will go before the OU council for consideration at its next meeting.

Last week it was announced that Sir Alex Jarratt, chairman of Reed International and chancellor of Birmingham University, is to chair the steering group which will supervise a series of efficiency studies.

As with these investigations, the OU study is likely to involve scrutiny by professional consultants.

Cabinet drops direct elections

Direct elections to the Inner London Education Authority have been effectively ruled out following a hostile reception for the plan at last week's meeting of the Cabinet. The revamped authority will almost certainly consist of nominees from the London boroughs.

Discussion of the issue was postponed initially despite support for the plan from a working group of ministers including Sir Keith Joseph, Secretary of State of Education and Science. Ministers were unwilling to give Cabinet approval because of the precedent that would be set for other services in the capital.

City merger hovers in balance

by Ngaio Crequer
and Karen Gold

The proposed merger between City University and City of London Polytechnic is again in doubt after the university senate decided not to participate in the feasibility study.

The senate vote was overwhelmingly for rejection, with only one against the motion and one abstention, and represents yet another change of mind at City. The council will discuss the senate move on Monday.

Opinion turned against the feasibility study after the publication earlier this month of detailed proposals by the Inner London Education Authority for higher and further education in London, including the merger.

The senate resolution, in response to the ILEA paper said, "The university is sensitive to the need to develop new structures in higher education to take account of changing requirements.

"It does not believe, however, that this is best done by simple amalgamation of institutions across the binary line. There is need for full consideration of the academic implications with the aim of establishing the national context for such developments, and foreshadowed in consultations presently being undertaken by the University Grants Committee and the National Advisory Body.

"There are of course particular difficulties in responding at the present time to the ILEA in view of uncertainties attending its own position, not least regarding finance.

"Accordingly the university would not feel able to participate in a detailed feasibility study of the recommended merger if asked to do so by the ILEA, although it would certainly wish to continue to develop the excellent contacts that have been made, and to explore the possibility for cooperation."

The senate was particularly concerned that there was no national academic context for the merger although the UGC and the NAB are considering mergers on their higher education debates. City does not particularly want to be the first polytechnic.

There are grave reservations about the ILEA report, a sense that the university's autonomy is threatened, and a distrust of the authority's motives.

Polytechnic and college lecturers in London were due to start a programme of disruption of ILEA activities from today in protest over aspects of the authority's merger proposals.

The London regional secretary of the National Association of Teachers in Further and Higher Education, Mr David Triesman, wrote to ILEA this week saying the association was in dispute with the authority from March 23, and would decide on March 24 what form the dispute would take.

Natfhe has representatives on numerous ILEA committees and would use various means to disrupt them, Mr Triesman said. He did not rule out strike action.

The protest is over what Natfhe sees as ILEA's failure to give two assurances: that there will be no academic staff redundancies as a result of the proposed merger; and that the resulting institution would not simply become a typical university.

Bradford keeps open mind

Talks have been held between senior officers from Bradford University and Huddersfield Polytechnic about academic collaboration, but both sides have denied stories of merger.

Professor John West, Bradford's vice chancellor, who was due to make a statement to senate this week about the moves, told *The THES*: "The rumours are wild but I can understand how they have arisen. I had dinner recently with Mr Kenneth Durrands, the rector of the polytechnic, and after discussing a number of issues, he said to me, 'What about merger?' And I said: 'What about it?'"

"I understand that they feel their future lies with some kind of federation, or bigger institution, and he has been given authority by his institution to talk to anybody.

"All I have said is that some time in the future I will visit the place, nothing else. I am keeping an open mind, and that is what we have said in our reply to the 28 questions. The idea of merger has never been discussed in the university," he said.

Mr Frank Barr, a pro-rector at the polytechnic, who was at the dinner, said there had been a meeting of officials since then.

He said that last summer their academic board had asked officers to explore the possibility of academic cooperation in the region. "The obvious contact was Bradford, so we decided to make the first approach, and the dinner followed.

"We talked about one or two areas where we could cooperate, such as in biotechnology, or modern languages. I reported this to academic board and they were encouraging.

"At the moment the specific thing is academic cooperation. If arising from that it seemed sensible to see if more organic links, like merger, was a good idea, it might go further."

ABRC sheds light on its science shopping list

by Jon Turney
Science Correspondent

The Advisory Board for the Research Councils has finally revealed its full shopping list of new scientific work, together with details of how the list was drawn up.

Papers published this week give details of the prospectus of scientific opportunities presented to the Department of Education and Science last spring, in advance of detailed debate on the science budget for the five research councils. This list is an amalgam of areas identified by the independent members of the ABRC and opportunities identified by the individual councils.

The topics originally identified by the independent members included diagnostic imaging, enhanced oil recovery, remotely controlled instrumentation, space, satellite remote sensing and high-energy particle physics. The last is ironic in view of the ABRC's subsequent decision to consider abandoning particle physics altogether.

The independent members also wanted more work in biotechnology, food and nutrition, information technology, marine sciences, civil engineering, neurosciences and causes and consequences of unemployment.

Many of these topics were included in the portfolios presented by the research councils, together with advanced technology for manufacturing, atmospheric sciences and deep geology.

From this disparate array of topics, the ABRC produced a shorter list it considered merited additional support, taking into account existing spending among the councils and scope for redeployment.

Top of the list after this appraisal was the Science and Engineering Research Council's bid for £15m over three years for work on advanced manufacturing technology, supported "not only on scientific grounds but because of longer-term economic benefits".

Then came food and nutrition (£7m over three years for the Agricultural and Food Research Council); and X-ray astronomy satellite (£12.5m over three years for the SERC); and the neurosciences, diagnostic imaging and nutrition (a three year total of £7.1m for the Medical Research Council).

The ABRC also elected to support new work in biotechnology, and bids for £12m from the Natural Environment Research Council for work in remote sensing, atmospheric sciences, marine sciences and deep geology.

Unhappily for the ABRC, this first product of its new "scientific opportunities" contribution to the annual forward look exercise which determines the science budget appears to have had little or no effect on the final outcome. All of the bids made for new money are likely to be resubmitted this year, and the board is trying to find new arguments to back them up.

Last year when level funding for the science budget was reaffirmed, apart from an increase to pay international subscriptions, the board was only able to express its regret that its case had not found favour.

Scientific Opportunities and the Science Budget 1983 DES/ABRC, March 1984.

Inquiry must wait for review

An inquiry into a merger of Aberdeen University and two local colleges will only be conducted as part of a Scottish higher education review.

It is a year since the university court asked the Secretary of State for Scotland and the Secretary of State for Education and Science to set up an inquiry into a merger of the university, Robert Gordon's Institute of Technology and Aberdeen College of Education.

But it is understood Mr George Younger is about to establish the Scottish Tertiary Education Advisory Council whose first task will be to review links between the eight Scottish universities, the central institutions and colleges of education.

The STEAC, an advisory body, is the successor to the Council for Tertiary Education in Scotland, which two years ago reviewed the structure and management of tertiary education.

Robot teaching

The Open Tech is to move into the area of robotics through the Organization for Rehabilitation through Training.

An urgent need for basic robotics training has been identified by the ORT – in particular among firms considering their introduction.

Universities 'should employ more short-term staff'

Universities should alter the balance between short-term staff and career academics to enable themselves to adapt more quickly to new requirements, Professor Peter Moore, principal elect of the London Business School and a senior member of the University Grants Committee, said this week.

Professor Moore put forward three possible initiatives designed to provide greater flexibility now that universities had become more professionally and vocationally oriented. As well as reducing the 90 per cent of teaching presently carried out by tenured staff, universities might limit tenure to those over 40 and should be allowed recourse to severance awards permanently to assist in changing the subject mix.

The universities had done a remarkable job in the past 20 years, he said, doubling student numbers, maintaining standards and increasing the supply of graduates in vocationally orientated subjects. But 'he foresaw five challenges facing the universities over the remainder of the century:

- As well as improving their capability to respond to changed needs, these were:-
- To broaden courses so as to reduce the pressure for undue specialization in the sixth-form curriculum.
- To alter the structure of degree courses to distinguish between the study-time necessary for mental and intellectual development, as distinct from the absorption of detailed knowledge for professional or vocational purposes.
- To play a full part, with professional groups, in providing continuing education.
- To assist in changing attitudes to demonstrate the importance of engineering, science and technology. Here the onus was on other areas of public life.

Professor Moore, whose lecture to the Royal Society of Arts was entitled "Universities: their role in a changing economic structure", concluded: "Meeting all these challenges would require a great deal of hard work and, more importantly, a great deal of courage.

"We have developed a higher education system of which we can be proud and whose high quality is internationally recognised. Nevertheless, quality cannot be directly equated with relevance. We need to ensure that, in the coming decades, universities remain in the mainstream of national life and do not become relgated to a backwater of irrelevance."

DON'S DIARY

MONDAY

On this first day of the spring semester, the thermometer outside my bedroom window registers a cool eight degrees Fahrenheit. The expansive campus of the University of Connecticut comes swiftly to life. Some 18,000 students converge from all over the state, a colourful, boisterous horde forming intricate moving patterns in the snow as they head for their first classes. The ducks on the frozen lake, already chilled and disgruntled, are driven to extremes of anxiety as their territory is invaded by early-morning hockey players.

My office is heated, American-style, to a fierce temperature. After the chill austerities of British energy-saving, it is a luxury to work in shirtsleeves in January. Students from last semester drop by and tell me about their new courses, with that enviable social ease of young Americans, oblivious to the constraints of hierarchy and status. Others come to persuade me that they absolutely must join my limited-enrolment seminar, or their lives will be ruined. Everything is humming, and it is not yet nine o'clock in the morning. At such times, I feel a hint of nostalgia for sullen British students who stay in bed till noon.

TUESDAY

Freezing rain turns the walk to work into a balletic exercise. My own first classes of the new semester start today. After 10 years of teaching, I still feel nervous.

There is, of course, no need. The group waiting for me in "social problems" is wonderfully typical. My first impression, which I have learned to ignore, is of a class of 20 divided about equally between football hulks and tiny, delicate girls with lots of hair and immaculate make-up.

In gaining their attention, a British accent is the functional equivalent of a funny hat. Their image of Britishers is garnered solely from televisions and combines the daftest elements of Monty Python with the egregious Higgins of "Magnum PI" – a mix of arcane silliness and antique vanity. This image has to be overcome.

Political sociology in the afternoon requires a less theatrical approach. This is a course for seniors and graduate students, about a dozen in all, and we generate an interesting discussion about American political thought in the eighteenth century. After the class, however, a slightly chilling note is struck by one woman student who confides to me that human destiny is controlled by visitors from outer space in UFOs, and that she has met them. While this seems as plausible as many sociological explanations, it threatens to inject an unwelcome element of craziness into our class meetings. I tell her to bring me the research literature or, better still, one of the visitors.

WEDNESDAY

A day free of teaching, dedicated by default to bureaucracy. The morning mail brings a letter from the American Sociological Association, rejecting a paper I had submitted for the annual conference in Texas. Judging by the speed of its return, the paper had not even been read; but such professional matters are arranged in mysterious ways. By way of balance, the Eastern Sociological Society has accepted another paper for a conference in Boston. Ah well, I would rather go to Boston than Texas any day.

After a few hours of letters, memos, files and forms, my brain feels like a bowl of yesterday's Grape-nuts. Therapy for this sort of fog through the snowy woods which begin on the edge of the campus. Halfway around my circuit, an overtaken jogger [illegible]

women's football team ("football" as in "soccer" – sporting equality has come only so far) out on a training run. Ignoring their derisive noises and rude signs, I puff along reflecting sadly how competitive sports bring women down to men's level.

THURSDAY

The temperature soars to 50 degrees, the snow melts, mud and slush are everywhere. Only the ducks are pleased. Who said that the British climate is unpredictable?

The city of Hartford, 35 miles away, advertises itself as the insurance capital of the world. It also holds my economic salvation. As the pound plunges to new lows against the dollar, I have seized the chance to do some extra teaching on Thursday evenings at an associated campus of the University in Hartford.

At 4.30 pm I set off, punch-drunk from two earlier teaching bouts. Everything goes splendidly until I turn off the main highway and start to follow the direction which someone has scrawled on a scrap of paper. The directions are wrong. Forty-five minutes later I am utterly lost in the featureless outer suburbs.

At last, some precise direction from a telephone linesman bring me to the place. The jogging guys off. Only 15 minutes late I hurl myself into the classroom, where the students are waiting with patience born of experience.

FRIDAY

The morning is wasted in the fruitless quest for a decent textbook for my course in Hartford. Every possibility is out of print, out of stock or otherwise unavailable.

In the afternoon my wife arrives from the university where she teaches on Long Island, a six-hour drive away. We are one of those contemporary dual-career commuting couples, and can hardly wait to be interviewed about it by some trendy sociologist of the family. She locks herself into the spare room with a formidable pile of books concerning the sociohistoric construction of gender roles. I go to the supermarket.

SATURDAY

There are many things to do around here on a Saturday. One may go to the nearest urban centre, a run-down mill town with the reputation of being the heroin distribution capital of the northeastern states. One may go to Hartford and look at the empty insurance offices. One may go back to the supermarket. One may feed the ducks. We stay at home.

It is on these dead days that we write, an egotistical activity which assumes, on no good evidence, that one's reflections on society are a saleable commodity.

At 7pm all such matters are declared off-limits to conversation. A graduate student from my home university, who is studying the Presidential primaries, stops by for a scratch meal. We talk about politics for a change.

SUNDAY

Snow overnight and a deep freeze with bright sunshine in the morning banish all thoughts of returning to intellectual labour. The landscape sparkles as we head north through Massachussets to a cross-country skiing centre in Vermont. We are enthusiastic beginners at this game, which is cheaper and safer than the downhill version. What's more, you don't have to dress like an outdoor fashion plate, or suffer the hearty social agonies of the après ski. Cross-country is a down-home sport.

In the morning we take a short, easy trail, re-learning what we learned last year, and practicing such basic skills as turning, stopping and digging yourself out of snowdrifts when you have failed to do either.

Poor navigation in the afternoon gets us on a trail we never intended to take, but the mistake is lucky – 11 kilometres of wonderful wilderness scenery with scarcely another skier in sight. Somewhat exhausted, but full of the virtue of healthy exercise, we drive home.

David Bouchier

The author is lecturer in sociology at the University of Essex, on an exchange visit to the University of [illegible]

Yesterday the University Grants Committee held their first lengthy session on their higher education great debate. Today we report a further selection of responses to their 28 questions.

More open approach wanted

by Ngaio Crequer

The University Grants Committee should be more representative of the university system, more open in discussing its criteria for decisions, and be seen to express more frequently views independent of the Government, says Manchester University.

Although it strongly supports the continued existence of the UGC, Manchester says it is not sufficiently staffed to do the jobs expected of it, and there is insufficient knowledge of the internal operation of universities.

The university is sceptical of the view that there should be a shift in the arts/science balance. "An attempt to engineer a rapid and large scale change in the present balance between arts and science places would be extremely costly, would fly in the face of the known pattern of demand for university places among the best qualified candidates, and would be based on nothing more certain than aspirations towards large scale manpower planning which has no record of success in the past and corresponds to no identified specific needs in the present."

There are reservations about a selective approach to research funding. There is the danger of rigidity and self-justification, and a tendency to follow fashion. "People and institutions must be allowed to swim against the tide."

Manchester says that the financial scenarios projected by the UGC could not be achieved without considerable legal and constitutional upheaval.

It received over 27,000 applications from home students for 2,900 places and unless there was political interference, could continue to recruit at its level even if overall demand dropped.

"Any reduction in target numbers for the university . . . should be recognized not as a result of falling demand but as a deliberate way of redeploying resources to a preeminent higher education institution of first choice."

There is a variety of views on the "new blood" programme but engineering, law, education, accounting and business finance, and theology felt the age restriction was a handicap.

But senate and council disagree about the need for closures. Senate opposes them but the council insists on adding a rider to the response saying that "rates of saving of even one per cent per annum up to the end of the century make the need for institutional closure a serious possibility . . . . the unhappy event that closures had to occur, the process should be conducted quickly on advice from a specially constituted body independent of Government and the UGC."

Dr E. S. Page: vice chancellor

Research change urged

Government research work could be done better and more cheaply at universities, and also make a substantial impact on university finances, argues the Reading submission.

They say that in 1981/82 only 1½ per cent of the total research and development budgets of the ministries dealing with defence, energy, health and industry was spent in the universities.

But Reading says there is no prospect of universities attracting much more non-Government money. "The money is just not available from British industry in the tens (and hundreds) of millions necessary. Nor is there much scope from individuals, but there could be some more if every gift were allowed fully against tax."

Reading says the essential difference between universities and other institutions is that in universities "the ablest students are taught by the ablest scholars and researchers . . . and all academic staff have a requirement to undertake research."

Reading also attacks UGC assumptions on student demand and says more note must be taken of social change, improved opportunities for women and mature students, and the role of continuing education.

But "if drastic reductions in numbers are imposed we think some closures and/or mergers of institutions are unavoidable".

Funding 'should be left to councils'

by Jon Turney
Science Correspondent

Selectivity in research support should be left to the research councils, though they would be willing to assist the UGC in decisions on recurrent grant levels to universities and rationalization within disciplines.

These points are made by the Science and Engineering and Natural Environment Research Council. The SERC is strongly opposed to more selectivity, arguing that: "research funding through research councils is already highly selective, and a clumsy attempt to be too selective on the UGC side could stifle new initiatives".

The SERC also expresses reservations about earmarking the research component of the UGC grant, although the council asks the UGC to monitor expenditure on research overheads and technicians. Alternatively, the SERC suggests, the UGC could ask universities for research plans quantifying this expenditure which would be used to help make decisions on overall funding. The SERC offers to help consider such plans.

The NERC shares the SERC's reservations about earmarking, and says there is no substitute for the subjective assessment of properly informed committees when judging department research performance. Again, the council offers help with this kind of decision-making, if needed.

The council is more sympathetic than the SERC to selectivity of funding within and between institutions. The NERC response says departments in expensive subjects must be staffed and funded above the viable minimum and this may imply a smaller number of stronger centres in some subjects, such as oceanography and geology.

Both councils argue strongly for preservation of the dual support system, a view shared by the Agricultural and Food and Medical Research Councils.

The two councils also agree that research in universities has suffered in recent years, and the SERC respectfully expresses regret that the UGC questions on resources are tied to assumptions about student numbers. The council says any decline in student population would not necessarily justify a decrease in university research.

The SERC comes out against a single body combining the functions of the UGC and the National Advisory Body, on the grounds that universities and polytechnics have distinct roles where higher education courses take place.

Both sectors should resist proposals for two year degrees or a hierarchical structure of institutions, since these would inhibit student access. Neither should be distracted by having to look for large amounts of external funding since "achievement of a high proportion of funding from such sources would be an extremely difficult exercise, and could lead to wasteful inter-institutional rivalry."

New blood schemes in future should operate across both sectors.

Dual support gets backing

by Olga Wojtas
Scottish Correspondent

Edinburgh stresses it has answered the UGC's questions only reluctantly since they are based on inadequate premises and imply a narrowing and rigidification of the university system.

Level funding, it warns, will result in an annual loss to Edinburgh of at least £400,000, and it points out that since science students are more expensive to train than arts students, each additional 100 science-based students will result in a further annual loss of £200,000.

Closing universities should not be considered before the transfer of additional degree teaching from the public sector to the universities is considered.

In Scotland, it adds, there are greater differences between the public sector and the universities than in the rest of Britain. The universities are responsible for the bulk of pure and applied research, while the centres institutions concentrate on practical vocational scientific and technical training, relating more closely to local needs.

There must be joint consultation between the Scottish universities, the UGC, the Scottish Education Department and Scottish Tertiary Education Advisory Committee to prevent overlaps at degree and postgraduate level.

Edinburgh backs the dual support system for funding research while adding that research has been underfunded for at least 10 years. Dedicated funding "enables the university to nurture developments which are unfashionable or which might be stifled if dependent on centralized control."

Union calls for transbinary planning links

by Karen Gold

Formal links between university and local authority higher education should be established particularly for regional and course planning, according to the National Association of Teachers in Further and Higher Education.

In the long term, a single body for all higher education planning would have advantages although it would have to be more like the National Advisory Body than the UGC, the Natfhe paper says.

Meanwhile, "the association believes that there is a compelling need for genuine transbinary planning at regional level," it says. Otherwise the one-way process, in which universities have a voice in local authority higher education planning through the regional advisory councils, but local authorities have no say in university planning, will continue.

Universities and colleges should also be sharing resources such as teaching and expensive equipment, the union says. But it does not want the two sectors to merge, since that would destroy the diversity and relationship with more advanced work existing in the 400 local authority institutions

Doubts over MSC role

by Patricia Santinelli

The Manpower Services Commission's effectiveness is criticized in an internal confidential Further Education Unit document which strongly doubts that the commission is better fitted than the education system to provide work-related further education courses.

The document, on the White Paper *Training for Jobs*, was expected to be discussed at a meeting of the FEU's board of management this week, with the aim of providing both a response and an alternative scenario to the Government's proposals.

The FEU, which has often mediated between the MSC and further education, says in the document that it does not frequently move into the political arena, but that the magnitude of the transfer must be questioned. The White Paper proposed the transfer of responsibility and funding for 25 per cent of all non-advanced further education away from the local authorities to the MSC.

"It will challenge many existing loyalties and create much confusion with respect to authority and policy in the NAFE area. Not least affected by this will be the Department of Education and Science, for one question that is inevitably raised is the implied inability and/or unwillingness of the department to generate policy or action on work related further education", the unit says.

In its criticism and assessment of the MSC's abilities in terms of curricula, the FEU points out that the commission's networks are no more comprehensive than that of local authorities and that it has to buy in professional expertise.

The FEU believes that the MSC could generate and impose national criteria but points out that the curricula issue outlined in the White Paper is mainly about satisfying local training needs not covered by a national framework.

"And as yet there is no real evidence that the MSC is any better at identifying and satisfying local training needs than were industrial training boards and/or colleges and local authorities", the unit says.

With respect to quality, the unit stresses that the monitoring of the Youth Opportunities Programme was an acknowledged failure, Nor had the MSC been able either locally or nationally to demonstrate it has significantly improved training attitudes, especially where the training function had been traditionally neglected.

In its argument for a more positive scenario than the one proposed by the Government, the FEU says the MSC should use its funds to give further education greater opportunities to provide more speculative job related courses, but that the colleges in consultation with local authorities should be left to decide their own priorities and balance of provision.

In addition the commission could be more positive about the role of NAFE in YTS, whilst locally it could support old as well as new skill courses with uneconomical numbers.

Local authority associations and the MSC were expected to discuss the White Paper yesterday.

Cannon broadside on Tories' policy

by Ngaio Crequer

A devastating attack on the Government's higher education policy was made this week by Professor John Cannon, chairman of the arts subcommittee of the University Grants Committee.

Professor Cannon, professor of modern history at Newcastle University said: "In place of any sustained and carefully thought-out policy, we have had a succession of schemes and wheezes and assertions and proposals which have little in common, save that most of them are stale and all of them absurd."

He told a conference on "The future of history – the 1980s and beyond" at Glasgow University there had been the most astonishing contrast between the personal academic distinction of the Secretary of State and the intellectual chaos of the policies over which he has presided".

Promises of level funding had been casually made and cynically broken. International academic and cultural links had been shattered by the overseas student fee policy. A blood-letting of the university system had been followed by a hasty and ill-conceived new blood scheme.

Some of the suggestions "were so transparently foolish – I am thinking of the two-year degree proposal – that they were hastily abandoned by their fond parents before the great debate ever started."

Professor Cannon said that rather than being apparently embarrassed by high student demand and trying to deflect or reduce it, Sir Keith Joseph should borrow the Prime Ministers' phrase and rejoice.

Nor was it true that the nation had failed in science and technology: we had a greater proportion of our graduates in these areas than most of our competitors.

Professor Cannon said history was an almost ideal general education and general training, encouraging students to weigh evidence.

The enormous spread and bulk of history meant that it offered a vast variety of intellectual challenges. Its concern for the actual event, the specific instance, acted as an anchor, to prevent unprofitable word-spinning.

Poly to give up mansion

The governors of Sheffield City Polytechnic have agreed to close eighteenth century Wentworth Wood House, a mansion and former teacher training college which the polytechnic acquired in 1977.

Teaching and student housing at Wentworth, which is 13 miles outside Sheffield, will end in summer 1985, although the polytechnic will continue to run conferences there until 1987.

The governors' decision this week was part of a reorganization to save £410,000 and included a reduction of the polytechnic's current seven faculties to five. The two departments on the Wentworth site – sports and human movement studies and environmental studies – will be moved back into two of the polytechnic's four city centre sites.

But the polytechnic's student union has pledged to continue to oppose the site closure, arguing that it will reduce the already strained student accommodation in Sheffield as well as the extensive sports facilities at Wentworth, which also has the longest facade of its kind in the country and a collection of antique furniture and paintings.

Student union president Mr Mark Kelly said that the governing body had promised the closure proposal was agreed subject to consultation with polytechnic unions. In the next few days the student union hoped to organize a protest shutdown by all student union members in south Yorkshire in protest, he said.

Once the polytechnic withdraws from Wentworth it will revert to nearby Rotherham District Council, which has a long lease on it. Discussions are also taking place between Sheffield, Rotherham and Barnsley local authorities on the future of non-academic staff who do not want to work in Sheffield.

Longer hours bid by Gwent

by David Jobbins

College lecturers in Gwent have been given less than six days to find savings which would lift the threat of longer teaching hours for 400 of their colleagues.

But they have been warned to gear themselves for industrial action later this month if the efficiency exercise fails to approach the savings demanded by the Labour-controlled county council.

It is the latest in a series of disputes with authorities over attempts to increase class contact hours involving the National Association of Teachers in Further and Higher Education. Similar battles have been fought by the union in Manchester and Croydon with a high degree of success.

This week Natfhe president, Mr Cecil Robinson, and national official Mr Jim Munnery held three hours of talks with Gwent councillors and officers over the proposals to increase class contact for lecturer 1 grade staff from 21 to 22 hours a week, and for lecturer 2 staff from 18 to 20 hours.

The authority intends to issue notices terminating existing contracts at the end of the month and issue new ones effective from September.

This action may by postponed if the search for alternative savings makes progress this week, but Natfhe officials are not hopeful.

"We really do not see how we can do very much in this short time," regional official Mr Don Dale-Jones said. "It is better to talk than to be in confrontation but I am afraid this is only a stay of execution."

Chairman of Gwent's education committee, Councillor Graham Powell, said: "Although regrettable, the proposals do safeguard the jobs of permanent full-time lecturers."

But Mr Dale-Jones said: "This is nonsense. Increasing class contact hours means reducing the requirement for staff – and if you do this you have redundancy."

Jane Anning, a Plymouth teenager on a Youth Training Scheme course at a local hotel, jousts with comedian Billy Connolly after receiving a prize from him at this year's Young Writers' festival.

Her play, Unity, was the first of four prize-winning works to be performed at the Royal Court Theatre, London. It will run as part of a double bill on weekdays until April 7. Among the other prize-winners was an Edge Hill College drama student, Lakvar Singh, whose play Manjit was also performed this week.

Under offer

Bedford College denied a press report this week that they were about to sell their Regent's Park site to a private American University for about £8m.

"It is premature to say we have negotiated a deal. We are at an advanced stage, but no agreement has been made," an official said. It is understood that there are at least three parties still in serious negotiation, including an Arab consortium who wish to turn the college into a museum.

NO QUESTIONS ASKED

Higher education gives staff and students the freedom to study their chosen subject. Plus the freedom to enjoy the many work and leisure facilities available at colleges, polytechnics and universities.
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More places for women urged

by David Jobbins

Student places must rise by a third by the end of the decade to meet the growing demand for higher education from women, the TUC women's conference in Torquay was told.

Ms Penny Mullen, a member of the executive of the Association of University Teachers, said the cuts in higher education were especially serious for women, while men still had a 50 per cent higher chance of a place in higher education.

The conference supported her call for vigorous opposition from the TUC general council to policies followed by the University Grants Committee which would "curtail women's hard-won rights to equality of educational opportunity."

Ms Mullen accused the UGC of meekly accepting Government figures purporting to show that student places should fall in line with the reduction in the 18-year-old population.

Participation by women was increasing, she said, "if this natural trend continues, we will need an increase in places of up to 33 per cent by 1989 when what we are being offered is cuts in numbers on the spurious justification of falling demand."

Competition for university places was already higher than at any time since the 1960s. "By 1989, if there is no expansion in university places, the competition will be even more fierce and it will be the female applicants who lose out," she said.

Mature students were also being squeezed out, a point taken up by Ms Eva Kaluzynska of the National Union of Journalists who, as an Open University student, spoke of the opportunities it had given for many women who had missed out the first time around.

"The founding principle of the OU was access for anyone who wanted higher education. The Government is undermining this principle and is strangling one of this country's most important educational resources."

Ms Felicity Harris (National Association of Teachers in Further and Higher Education) called for implementation of the Manpower Services Commission's adult training strategy to ensure women's educational opportunities were enhanced.

And Ms Penny Holloway (Natfhe) called for a right to education for prisoners with more resources devoted to female prisoners.

"The educational process is a central part of the preparation of prisoners to take a useful place in society as well as enabling them better to come to terms with the penal system. Prisoners are already disadvantaged and it seems hypocritical of the Government to support education for prisoners while refusing to increase spending to combat the problems of illiteracy, and lack of vocational skills."

The conference also turned its attention to the plight of women in employment. Ms Tricia Leman Natfhe's convincingly reelected representative on the TUC women's advisory committee, said that unemployment meant women's chances of promotion were almost non-existent. "In Natfhe we have evidence that discrimination is taking place in interviews. Women are being asked what kind of contraceptive they use and what child care arrangements they make as a criterion for employment."

WISE scheme criticized by unions as elitist

Trade union leaders fear that an initiative to bring more women into the engineering profession places too much stress at graduate level.

Their anxieties over the emphasis of Women into Science and Engineering year were endorsed last week by the TUC women's conference.

Chair of the womens advisory committee, Mrs Marie Patterson, told the conference that WISE must not concentrate on the elite alone. "The emphasis must not simply be on entrance to the top jobs. We must remind both the Engineering Council and the Equal Opportunities Commission of the need to encourage and improve the position of the 90 per cent of women in engineering who are employed in the relatively low skilled jobs."

Ms Geraldine Allinson (Institute of Professional Civil Servants) said that one of the barriers was not employers' attitudes but the attitude of union members who could not come to terms with women engineers working alongside them.

A conference organized by the Confederation of Shipbuilding and Engineering Unions in the autumn will invite representatives of the teacher unions including Natfhe and the AUT to discuss the issue.

The conference overwhelmingly rejected a call for withdrawal from the Youth Training Scheme. It accepted a motion which although critical accepted the need for continued involvement.

For the WAC, Mrs Margaret Morrison said: "If we pull out there is nothing we can do to solve the problems of job substitution or employers exploiting these young people."

Support for pulling out came largely from the National Graphical Association, the National Union of Journalists, and trade council delegates.

The Cancer Research Campaign opens a new £500,000 laboratory drug research at Aston University today. The laboratory will be for testing new anti-cancer drugs like Mitozolamide, shown here b prepared for injection into volunteer patients. The new unit, at university's department of pharmacy, will be opened by Sir Ja Black, director of research for Wellcome laboratories.

Finding more *room for* manoeuvre

New methods of obtaining accurate and realistic information on the student capacity of further education colleges are recommended this week by the Department of Education and Science.

A design note prepared with the support of the expenditure steering group (education) on educational building says that up to now such calculations have relied solely on the space norms contained in documents relating to building design.

The note proposes two methods of assessment because no single method can fulfil the criteria of simplicity and responsiveness to local circumstances.

The first method results in an overall estimate of the total capacity of a college and will show whether there is spare or deficit capacity.

The second results in a more detailed assessment showing what types of accommodation are over or underprovided and whether the mix or type of space is appropriate.

Both methods have been tested in various pilot studies and in each the results give a notional capacity in "space full-time equivalent" students. In its coversion of enrolled students the DES has defined full-time and sandwich students for example as being equal to one SFTE, part-time as 0.22, part-time day and evening as 0.22 and block release as 0.33.

In its comment on the first method the design note says this is quick and easy and does not require inspection of individual rooms. On testing it was found to be reasonably accurate with utilization levels based on 80 per cent frequency of use and 80 per cent average occupancy.

On the second, the note says that this method allows for local judgment allied to the use of area standards. It can also provide guidance for management decisions on space use, involving, for example, the adaptation of buildings to achieve a closer match between student numbers, courses and accommodation.

"Assessing the Capacity of Further Education Buildings, Design Note 27," available free from Publications Despatch Centre, DES, Honeypot Lane, Stanmore, Middx HA7 1AZ.

Cardiff caught out by debt of £1m

by Ngaio Crequer

University College, Cardiff, will be more than £1m in debt this year, rising to £2.5m in 1984/85 if no action is taken and allowance is made for inflation.

The shock figures, when the college was expected to end the present financial year with a deficit of only £310,000, were revealed at the last meeting of the finance committee.

The reasons for the rising deficit are:

- A shortfall in fee income of some £290,000 from overseas students. There was a 10-15 per cent fall in the projected number of overseas students, which had been budgeted to increase.
- An overshoot on salary expenditure of some £250,000 replacing staff who have left or retired (outside the compensation scheme) and non-academics.
- Expenditure on revised national insurance payements, some £40,000.
- Clawback half-way through the year by the University Grants Committee of £140,000.
- Reduction in the college's UGC grant for 1984/85 by some £450,000.

The college is urgently looking at ways of making economies and has agreed savings targets of £1.5m in 1984/85 and £3mln 1985/86, so as to provide a financial buffer.

There will be more stringent examination of the filling of vacant posts, and there are likely to be cuts in maintenance, portering and cleaning, workshop and photographic facilities, and computing and photocopying services.

Staff have also been exhorted to attract more overseas students.

Consortium move would save fine art department

by Karen Gold

Hampshire County Council's education committee has agreed in principle to set up a consortium of colleges teaching fine art, in order to avoid closing a department.

The principals of the four colleges involved will report to the county council on how they see the consortium working next week. But Hampshire's education committee chairman, Councillor Philip Meridale, has said that each college is likely to specialize in a particular field so that students can both transfer between them and be directed on entry to the specialist field they prefer.

The colleges involved are Portsmouth Polytechnic, Winchester School of Art, Southampton College of Higher Education and Portsmouth College of Art, Design and Further Education.

Trevor Thomas, chairman of the National Advisory Body 1984/85 planning committee, said the NAB recommended that the polytechnic's fine art intake should be cut, endangering the department's future, while that at Winchester should increase.

The polytechnic has decided to keep its intake at the current level of 40 this year, and Hampshire is subsidizing fine art courses throughout the county for 1984/85 by £163,000. The polytechnic department would be most vulnerable without the consortium, because it would have very little formal financial support, according to Mr Meridale.

"It will be organized based on the leadership of the polytechnic as the largest single higher education institution," he said. There would eventually be fewer student places, and some of them would be organized into one course with different elements taken in different institutions' design and architecture related studies in the polytechnic and fine art at Winchester. The two higher education colleges would concentrate on design, art and [illegible] and the polytechnic on [illegible] which is the SERC's broad area [illegible]

Engineers seek longer term funding

by Jon Turney
Science Correspondent

The Engineering Professors' Conference is pressing the Science and Engineering Research Council to make radical changes in its funding of engineering.

It wants an SERC strategy group to recommend a shift of funds to long-term research, away from initiatives like the Teaching Company Scheme and special directorates.

When EPC representatives met the SERC needs of engineering working group earlier this month, they argued strongly for a shift of resources both within the SERC and within the council's engineering board. Some EPC members argue that the council should have just two boards – one for science and one for engineering – instead of the present four.

This is unlikely to happen in the foreseeable future, although reform of the board structure is on the council's agenda. But the argument underlines the strength of feeling among university researchers in engineering that they do not get a fair deal from the SERC.

The Engineering Professors' Conference has long been a strong critic of SERC funding. The EPC argued for some years for a separate engineering research and development council, but now seems resigned to pursuing its case within the existing SERC.

Non-EPC members of the needs of engineering group, which should report to the engineering board this summer, would prefer to see the group's recommendations focus on ways of mobilizing funds from outside the council.

They believe that if the SERC dropped the Teaching Company Scheme – widely regarded as a successful effort in academic-industrial collaboration – no one else would back it. But the requirements boards of the Department of Trade and Industry, for example, could be brought into closer contact with the SERC.

Although SERC representatives already sit on requirements boards, there was a feeling on both sides that the boards could be better acquainted with [illegible] and polytechnic research which is the SERC's bread and [illegible]

news in brief

Eastern promise

Senior academics from [illegible] polytechnics and two universities in the North East of England [illegible] embarked on a joint promotional [illegible] to the Far East, hoping to [illegible] students, research contracts and consultancies to the region.

The visit was proposed and organized by the British Council [illegible] take in Hongkong, Indonesia, Singapore and Kuwait and will last [illegible] fortnight. The five institutions [illegible] castle, Sunderland and Teesside polytechnics, Durham and Newcastle universities, already hold joint meetings and collaborate in research and industrial projects.

V-c retires

Sir Roy Marshall, vice chancellor of Hull University, is to retire in September, 1985, a year early, to establish a suitable "natural break" in the structuring of the university.

Sir Roy, who is 63, became chancellor in 1979, after being secretary general of the Committee of Vice Chancellors and Principals.

Russian study

Sheffield University student will be learning Russian will now be able to extend their teaching practice in the town's specialized language and maths schools.

The students, who normally spend their Easter vacation on a Russian language course at the Language Pedagogical Institute will now spend one of the two weeks alongside Soviet teachers in the classroom.

Bath success

Bath University's Master of Engineering course in electrical and electronic engineering has been accredited by the Institution of Electrical Engineers for full educational and training requirements. Graduates normally [illegible] corporate membership of the IEE [illegible] for the two years [illegible] in industry after [illegible]

UNION VIEW

Time to stop the steamroller

The Prime Minister's crude and rather hurriedly cobbled together plans for the future government of Greater London and the metropolitan counties have met with an endless barrage of criticism from all political directions and from the full range of interest groups. Students are among the strongest critics of these plans and in London some people have been curious to observe the strength of student support for the GLC. Indeed, it is when acting in defence of both the GLC and the ILEA that London's students have recently been most vocal.

Not too long ago the GLC could easily have been abolished without many students even noticing. Three or four years ago in the sleepy days of Sir Horace Cutler, they would have wondered what possible difference it would make.

Since the last GLC elections in 1981, the council appears to have woken itself up. It has implemented a range of new policies – not always without Conservative group support – which are quite clearly in line with the aspirations of not just London's students, but of the capital's young people in general. We have a council which subsidizes bus and tube travel to the point where it becomes affordable; a council which believes in spending money to keep Londoners in work rather than to keep them on the dole; a council which takes positive action to combat racism and racist attitudes within our society; a council which refuses to pretend that Londoners would survive and East-West nuclear conflict and a council which seeks to provide cheap and accessible arts and sports activities.

Unfortunately it is this awakening and these popular policies which appear to have set Mrs Thatcher on her present course. From the student point of view, a local authority is being threatened with abolition for no greater "crime" than that it has become relevant to the people whom it is intended to serve. It is to be abolished because its majority group has acted to implement the manifesto upon which it gained election. It could be said that it is being abolished because its leaders have tried to play fair with their constituents. Speaking at our national rally on March 10th, Ken Livingstone put forward his view that the GLC's greatest "crime" was that it presented an alternative view to the negative approach which this government has put forward. This union would not disagree with him.

In the case of the Inner London Education Authority our members' education will be affected. Despite our occasional differences with the ILEA leadership – we respect and have supported their stand against the government during the past three years. The ILEA has so often led the way both in new educational initiatives and in resisting massive cuts in funding, that the governments attempts to silence its leaders and stamp out their independence is criminally dictatorial and educationally disastrous.

The government and its supporters may well feel passionately that the GLC and the metropolitan authorities must be abolished in order the save Britain from economic ruin. They would do well to take into account the passion with which many of us will defend the GLC and its services. In London we've been learning some new abbreviations, and practising some ancient slogans. We talk once more about democracy. We want to stop the steamroller.

Tony O'Brien

The author is convener of NUS London Students Organization.

Dole 'preferred to YTS'

by Patricia Santinelli

Many thousands of youngsters are rejecting the Youth Training Scheme because they prefer to stay on the dole, Youthaid warns in a critical report sent to all MPs this week.

Youthaid says that around 110,000 16-year-old school-leavers have turned down a place. One reason is that the scheme is "training on the cheap", with each place costing some £200 less a year than on the Youth Opportunities Programme.

Commenting on the report, Mr Paul Lewis, director of Youthaid, said: "This is depressing news for all who hoped that the scheme would provide good training and a fair chance of a job. But it is hardly surprising when the scheme is run on the cheap, with less than a 50/50 chance of a job at the end.

"We hope that the Government will take our report to heart and consider ways of improving the training and offering something positive at the end. Otherwise the scheme is doomed to mediocrity."

Youthaid says that the shock evidence that so many unemployed youngsters were giving the YTS the "thumbs down" came in a recent reply from the Secretary of State for Education in the House of Commons, Sir Keith Joseph said that out of 320,000 16-year-olds not in work or full-time education, only 220,000 had joined the YTS.

It points out that these figures flatly contradict Government claims about the scheme, for example that the low take-up on the scheme was because young people were finding jobs or staying on in education.

"The new figures show that the number of 16-year-olds in jobs stayed constant at 170,000 between January 1983 and 1984. Moreover the number of 16-year-olds in full-time education has fallen from 440,000 in January 1983 to 400,000 in January 1984," Youthaid says.

Youthaid has calculated the disparity of spending between each YTS and YOP place on the basis of £1 billion spent on 460,000 YTS places at £2,174 per place. In the final year of the YOP, £743m was being spent on the equivalent of 315,000 places, or £2,359 per place.

The report also predicts that the Government will attempt to introduce full compulsion for 16-year-olds to join the YTS through the renewal of benefits when it reviews entitlements this year.

A call for a radical shake-up and urgent review of the YTS has come from voluntary organizations whose schemes are being threatened with cuts or closure by the Manpower Services Commission.

The Government announced recently, against the advice on the commission and the Youth Training Board, that cuts of 30 per cent would be implemented in YTS places run by voluntary organizations and local authorities.

In a stark report, *YTS: Let's Start Again*, the National Council for Voluntary Organizations warns the MSC and the Department of Employment that unless the structure of the YTS is rethought, there is a strong risk of losing the valuable contribution of both voluntary organizations and local authorities.

The report warns that the cuts will lead to a two-tier programme, will brand certain young people as second rate and imply that some of them need remedial training.

Among the changes the NCVO wants are the end of the rigid two-tier system between Mode A and Mode B schemes. It also seeks greater partnership between different sponsors, with trainees being given the maximum opportunity to swap from one scheme to another, regardless of their ability or potential.

Altogether some 45 projects run by voluntary organizations are under threat of closures.

The Youth Training Scheme: Briefing Paper, from Youthaid, 9 Poland Street, London W1, £1.50.

YTS – *Let's Start Again*, available from the National Council for Voluntary Organizations, 26 Bedford Square, London WC1.

Association seeks MPs' support

A bid is to be made to win back grant aid for the Educational Centres Association, following the Department of Education and Science's decision to phase out funding over the next three years.

The association's executive, which held an emergency meeting to discuss the decision, is to approach MPs asking them to raise the issue in Parliament.

After 60 years, the association's future is threatened by withdrawal of the £18,000 a year grant. Under the DES proposals funding would be reduced to £7,000 next year and completely removed by 1988.

Member institutions of the ECA, which range from university extramural departments to small educational centres, will also be asked to support the campaign.

The ECA's executive is also to send a letter to the DES asking for reconsideration of the decision. At the very least the executive is hoping for a stay of execution to allow time to explore other means of financing.

Lecturers' diploma call

Steps to improve the quality of teaching at Birmingham University are to be placed before its senate by students who feel that professional training of lecturers is being neglected.

Birmingham's guild of students believes that the cuts offer an opportunity to replace quantative growth by qualitative growth by moving towards the establishment of a diploma in teaching in higher education.

It says: "Institutional resistance and the resultant campaign against professional training is merely the natural outcome of a long tradition of regarding university teachers as qualified by virtue of their degrees."

"To change this tradition it would be necessary to make a new start in appointments policy rather than hope for the sudden or even gradual reversal among existing teaching staff."

The guild says that if a diploma was established lecturers could qualify for the equivalent of at least two annual salary increments – an advantage they would retain throughout their teaching career.

"Surely the fact that the academic profession requires no qualifications, no sign of proficiency in the teaching element of the job leaves universities open to attack," the guild says.

Hague demands ABRC shake-up

by Jon Turney
Science Correspondent

Sir Douglas Hague, chairman of the Economic and Social Research Council, last week called for a shake-up in the affairs of the Advisory Board for the Research Councils.

As a newcomer to the ABRC and a management scientist, Sir Douglas said the immense complexity of the managerial problems faced by a body taking decisions across the whole of science and technology demanded a change in its entire culture and climate of thinking.

He proposed the formation of a separate ABRC strategy unit as a step in this direction, "to challenge orthodoxies, to promote learning within the ABRC and to ensure the change actually happens".

Sir Douglas's comments were part of a wider plea for application of the expertise of business schools and management institutes in decision-making, in his Mond lecture at Manchester University.

He lamented the cultural gap on managerial questions between the social and natural scientific communities, exemplified by the response to a paper he had circulated to a number of scientists on the ABRC.

"They insisted that they found what anyone from a business school would regard as a totally conventional approach as verging on the incomprehensible," Sir Douglas said.

Sir Douglas Hague: plea for expertise

Underlying his comments is a strong dissatisfaction with the ABRC's approach to the science budget, which he believes reflects a conviction that research deserves more resources irrespective of considerations of efficiency or costs felt elsewhere.

But while the scientists' approach was unsatisfactory, Sir Douglas also found fault with the practices of businessmen drawn into Government decision-making and of civil servants. Businessmen took an over-simple view of Government problems, he felt, and civil servants were trained only to operate an administering bureaucracy.

Somehow, the ABRC and other bodies making policy on novel technical and social questions, must develop a learning bureaucracy, Sir Douglas argued. "We need Whitehall to develop a connected set of learning organizations. This would comprise the ABRC, the research councils, parts of the Department of Education and Science and indeed parts of other Whitehall departments."

4
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Cox in attack on polys

by Karen Gold
and Patricia Santinelli

Polytechnic resources have not been rationalized enough because of an absence of overall policy for higher education, Baroness Cox said in the House of Lords debate on higher education.

Asking whether there was a need for London to have eight polytechnics, she said: "These colleges often have relatively small numbers of students in some departments which are expensive to maintain".

"Moreover, they often enjoy lavish funding in diverse areas ranging from well-staffed and well-equipped media resources units to student unions, with as many as six full-time, highly politicized sabbatical officers paid from public funds."

She supported the polytechnic principle of technical and vocational education, but not the way some polytechnics had developed, in particular the way public sector arts students now comprised 23 per cent of non-university provision, while university arts students comprised 21 per cent of university provision.

She also questioned the comparability of academic standards between the public sector and universities, quoting the Polytechnic of North London, where she was previously head of the department of sociology. Student disruption there continued and "certain academic practices are condoned which many outside that college believe to be unacceptable".

Giving the example of the circulation of examination themes at PNL, she asked how many other students at colleges and the Open University would love to have some such explicit guidance. "They feel they have to work much harder and do not see why the polytechnic students' degree should be seen to be of equal value to theirs."

Of the Council for National Academic Awards agreement after student protests that the practice should continue at PNL for another year, she said: "I cannot help being worried about academic standards when those charged with the responsibility for maintaining them appear to be swayed by student action of this kind".

"As a nation we must be sure that none of our institutions of higher education gives students academic short shrift or abuse the precious resources entrusted to their charge, and that while academic freedom is protected there is sufficient accountability to see it is not abused," she concluded.

Colleges of education and the voluntary sector needed stability rather than more change, accompanied as it was by the fear of possible closures, the Rt Rev John Gibbs, Bishop of Coventry, warned during the debate.

Commenting on the Robbins report, the Bishop said that its reading had not led him to believe that all higher education should be concentrated in the universities. They did have to be preserved as centres of excellence but not at the cost of different kinds of excellence in other institutions.

"I am nervous at the implication that there is only one kind of excellence and in our system we suffer from the kind of academic snobbery which sees the ancient universities as the only model of excellence and which reduces all other institutions to pale reflections."

Attacking the Department of Education and Science's concept of concentration, meaning a larger number of students in fewer compartments, the Bishop argued for a greater diversity of institutions with clearly defined objectives achieving their own excellence with easier transfer between them.

Universities must heed 'revolutionary' report

by Maggie Richards

Universities must pay special attention to the findings of a University Grants Committee working party on continuing education, Dr Edwin Kerr, chief officer of the Council for National Academic Awards has urged.

Dr Kerr, chairman of a similar group within the National Advisory Body, last week described the UGC report as "revolutionary in its thinking". He was addressing a one-day seminar at the Policy Studies Institute on adult experience and learning.

In particular the discussion concentrated on assessment of prior learning and its development both in Britain and in the United States.

American experience in the field was outlined by Mr John Strange of the Council for the Advancement of Experiential Learning. He related how recognition of prior learning had expanded during the past 14 years, from a handful of institutions to currently more than 1,000. He estimated there were a further 800 American institutions offering some covert form of acceptance of prior learning.

Case studies from British institutions included a system of prior learning assessment at Middlesex Polytechnic and a description of a new project involving National Coal Board employees volunteering to take part in experiential learning.

An American consortium of higher education institutions established in Philadelphia to expand adult education and provide counselling and assessment was described by Pamela Tate, the group's assistant director.

She explained how the consortium had initially promoted an education centre for adults and later combined this with outreach work. Contacts with industry were established and the consortium began to develop long term educational strategies in conjunction with companies concerned about retraining and the impact of technological change on their employees' skills.

More recently an educational centre had been established on a newly developed industrial estate to provide advice, counselling and assessment of prior learning for employers and employees.

Mr Norman Evans, of the Policy Studies Institute, referred to the need in Britain to encourage the same degree of collaboration between employers and educational institutions. He suggested the creation of a bureau to provide a mechanism through which communication and action could take place.

Three Ulster groups with most to lose

by Mary Kelly

Women, Roman Catholics and working class students will be hit hardest if higher education places in Northern Ireland are cut, according to a new report.

It shows that these groups have benefited most from the expansion of universities and polytechnics over the last decade, but their increased participation could be wiped out if reductions imposed in Ulster were in line with those proposed for the rest of the United Kingdom.

The 25-page report, produced by Dr Bob Osborne of the Ulster Polytechnic, Mr Bob Cormack of Queen's University and Ms Norma Reid and Mr Arthur Williamson of the New University of Ulster, looks at the social class, sex and religion of Northern Ireland undergraduates in 1973 and 1979 and the implications of Government policy on participation in higher education.

It finds, for example, the proportion of manual workers' children going on to higher education rose from 25 per cent to 31 per cent of the total in 1979. And there was a slight, but noticeably larger representation of those from manual backgrounds among Northern Ireland university entrants – 26 per cent in 1979 compared with 22 per cent of all British entrants.

Between the survey years Catholic participation in higher education rose by 71 per cent compared with 39 per cent for Protestants. Catholic participation also showed some significant contrasts with that of Protestants in terms of social class.

The number of women students also showed a marked increase in 1973 they made up 41 per cent of new students and by 1979 this had risen to 46 per cent. Part of this rise, according to the researchers, may be attributed to the decline in opportunities in teacher education.

But the report points out that these groups will be hit hardest if there is a period of contraction because they have, on average, lower A level results than Protestants, men and white-collar workers or because they tend to favour arts courses, the area which will bear the brunt of the cuts.

The researchers show that while there was no real gap in the examination performance of men and women there was a significant difference in the subjects chosen, with only 22 per cent of women taking science in 1979 compared with 51 per cent of men.

Their study also shows an overall shift towards arts courses between 1973 and 1979 with Northern Ireland university entrants showing a heavier bias towards the arts than their counterparts in mainland Britain.

The report notes that around one third of each year's entry leaves Northern Ireland to study in Britain and it is the most able students who go. Protestants are also more likely to go than Catholics.

Inhabitants of flats next to Edinburgh Castle may have paintings by the French post-Impressionist Paul Serusier under their wallpaper, according to a Glasgow University lecturer.

Miss Clare Willsdon of the department of the history of fine art, and a specialist on mural art in Britain believes the above line drawing is a transcript of a mural, *"Pastorale Bretonne"*, which the artist painted in Ramsay Garden as part of a set of over 80.

Change of direction for board

The Engineering Industry Training Board is attempting to silence its critics by shifting its priorities from grants for specific schemes to advice and consultancy for industry.

The board has recently come under fire from leading engineering companies, who called on the Government to abolish the EITB because it had lost touch with the new problems of training for new technology. The companies were backed part of the way by the Engineering Employers' Federation, which wanted the board's £9m a year budget reduced.

The changes in the EITB's programme, agreed at a meeting last week, will mean closer attention to industry's immediate needs, especially in training for use of electronic systems. The board will recruit more specialist staff to deal with these areas, and divert money from long-term grants.

Sir Richard O'Brien, chairman of the EITB, said; "The board reached unanimous decisions on a fundamental change of direction. It is right that engineering training should remain the responsibility of the EITB. It has the expertise, the contacts and the capacity to deliver".

The board is financed by a 1 per cent levy on engineering firms' payrolls, with exemptions granted if the company's training is certified as adequate. The EITB has also decided that the portion of the levy which is retained to pay its running costs, rather than returned through grants, will be reduced slightly.

College fears 'deal' over transfer

There are fears at Bell College of Technology that the Scottish Office will leave it under local authority control in return for Strathclyde Region giving up Glasgow College of Technology.

The Scottish Education Department announced last year that Bell, Glasgow College and Napier College in Lothian Region should be transferred to central control, since they concentrated on advanced further education with non-advanced colleges remaining under regional control.

Strathclyde Regional Council is opposed to the transfer of the college. But an internal memo from Bell's principal, Mr Douglas Baker, warns that there are "widespread suggestions that a deal is pending" with the SED conceding Bell in return for Glasgow College.

Such a move would endanger courses at Bell, which runs 94 per cent advanced courses, says Mr Baker. Since the SED controls student quotas for degree courses and approves advanced courses, "any future reduction in advanced work in Scotland is most likely to be at the expense of this one college".

Health visitors' courses and training courses for technical teachers would be jeopardized if Bell did not become a central institution, according to Mr Baker, since the UK policy is to concentrate advanced courses in centrally-run colleges.

"Despite assurances from the chairman of the further education committee, Strathclyde cannot hold out alone against this policy as it does not control allocation of student grants or advanced courses."

Bell's contribution to higher education should not be jeopardized as a "rather useless sacrifice" in the battle about whether higher education should be under national or local control, the principal adds.

The Secretary of State for Scotland had said in July that he would take account of the interests of staff and students at the institutions to be transferred, but Bell had been given no chance to put forward its views since negotiations began.

Students demand Welsh-speaking staff only

A complete end to recruitment of staff who do not speak Welsh to University College, Aberystwyth, is being demanded by students at the college.

In a report calling ultimately for the establishment of a separate Welsh College by the end of the century, Aberystwyth's Union of Welsh-Speaking Students says academic, administrative, secretarial and library staff who speak only English should not be recruited.

And the union says that opportunities for existing staff to be released from their duties to learn Welsh should be increased.

"While recognizing that there are problems in securing Welsh speaking teachers and librarians, it would indeed be a great achievement to appoint a Welsh speaker or willing learner to each and every post within the college," the union says.

But it says that despite a professed college policy of promoting the Welsh language, two appointments to chairs have been filled by people without Welsh even though there were suitably qualified Welsh speaking candidates.

"All members of staff should be able to teach through the medium of Welsh," the union says. "The practice of appointing monoglot English candidates to academic posts must cease."

A separate Universities Central Council on Admissions for Wales and separate funding are also proposed to counter the effects of English students entering the University of Wales.

Academics to simulate secret Think Tank exercise

The future of the welfare state – including provision of higher and further education – is to be charted out in an exercise that aims to repeat in public what a controversial Government Think Tank report covered in secret two years ago.

A three-day conference involving leading academics in the field will be held at Bath University in June to investigate links between social policy and the economy and to examine "baselines" economy for welfare provision.

This will involve simulating exercises carried out by the Central Policy Review Staff for Mrs Thatcher in 1982 shortly before the "Think Tank" was abolished. The CPRS report, leaked to the press, discussed options for privatizing higher education including switching to a student loans system.

An eight-strong team of academics and policy makers will take part in moderator exercises playing around with the kind of economic assumptions used by both the CPRS and the Treasury.

In all about 40 academics, journalists, and civil servants from the Treasury, the Department of Employment and the Department of Health and Social Security will review social policy and identify areas of ignorance.

The exercise is part of its effort to promote relevant research. And it embraces a "realistic" economic approach. It is being organized by Professor Rudolph Klein, professor of social policy at Bath – a current visitor in the welfare state field, and by Michael O'Higgins, lecturer in social policy for six years at Bath and reappointed as special adviser to the Social Services Select Committee.

Professor Klein wants to get away from the idea that social policy is a deadweight of the economy.

overseas news

David Dickson reports from Paris on the European reaction to a manned space station

Reagan invitation gets a mixed reception

President Reagan's invitation to European nations to collaborate in the development of a manned space station has precipitated a major debate in Europe over the future of its activites in space, and in particular the joint programmes carried out through the 11-member European Space Agency.

He announced in January that the station is to be built over the next 10 years by the National Aeronautics and Space Administration.

The American invitation has been eagerly welcomed by government officials in some countries, such as West Germany. Germany contributed most of the financial support to the Spacelab, the orbiting laboratory built by ESA as its contribution to NASA's space shuttle programme, and launched by the shuttle last autumn. Together with Italy, Germany is keen to build on the technical experience it has gained to develop new components for manned space systems which, if the invitation is accepted, could be integrated into the US space station.

France and Britain, however, are both considerably less enthusiastic. France is more interested in emphasizing Europe's need to remain independent from the US in space technology, and in particular to develop a significantly more power version of the launcher Ariane which could be used for manned space missions. Britain has long made it clear that it is more interested in the commercial aspects of space technology, such as telecommunications satellites, than in space spectaculars.

Furthermore many of Europe's space scientists are concerned both that a major commitment to the space station could result in yet further squeezes on an already tight budget for the more basic fields of space research, and that the scientific opportunities it offers could be achieved easier by other means.

Dr Herbert Curien, president of France's national centre for space studies and chairman of ESA's administrative council said: "Most scientists think that a free flying satellite is a more efficient way to obtain important scientific results than a space station."

Yet each European country realizes that the cost of any individual significant space project is now so large that most can only be financed internationally. As a result, ESA is currently seeking to put together and sell to its member states a package of projects that goes some way to meeting the demands of each – just as it did at the beginning of the 1970s when it agreed to pursue simultaneously the Spacelab, Ariane and telecommunications satellite programmes.

It was against this background that NASA's administrator James Beggs visited Bonn, Rome, London and Paris at the beginning of the month on the first leg of a round the world tour to invite foreign participation in the space station.

Speaking in Paris shortly after addressing ESA's council, Beggs said he was hoping to convince European governments to contribute an additional 20 to 25 per cent to the space station on top of the $8 billion which President Reagan has already announced that NASA is planning to seek from Congress over the next 10 years. Japan is being asked for another 10 to 15 per cent.

Beggs also made it clear, however, that NASA needs a quick decision. The agency plans to award contracts for what are called Phase D studies to various industrial bidders early next year for design work on different aspects of the station, and any country or group of countries which wants to play a major role should be signed up by then.

Britain's minister for information technology, Mr Kenneth Baker, is said to have told Beggs that there would probably be little problem for Britain in finding a sum equivalent to 10 per cent of the predicted costs from European nations, the minimal level at which both sides agree that participation would be meaningful.

He stressed, however, that participation on the scale which Beggs was suggesting would require a quantum leap in Europe's commitment to activities in space if it was not to undermine development programmes in other fields.

This, in turn, would require a top level political decision among Europe's leaders. At present, the whole of the European space budget is about $1.7 billion – less than one sixth the annual budget of NASA.

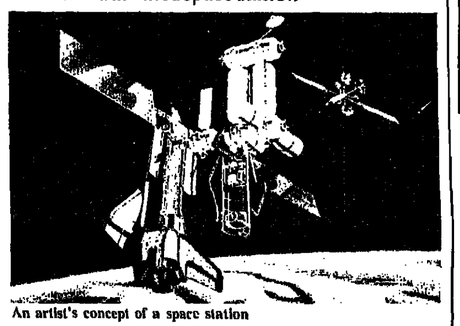
The agency itself has little doubt that it would like to collaborate with NASA. Studies have already been going on both within the agency and in several of its member states – in particular West Germany and Italy – on the form that this collaboration might take.

At its next meeting in June, ESA's council will examine a proposal being put to it jointly by Germany and Italy to undertake a programme of development of modular units for manned space activities. This would be known as Project Columbus, since it would aim to be ready in 1992, the five hundredth anniversary of the discovery of America. Early planning documents make it clear that, although the units could form an independent European space station, they are primarily conceived of as the basic components of the European contribution to NASA's scheme.

Matching up ESA's and NASA's ideas at the technical level are, however, likely to be relatively straightforward compared to the diplomatic juggling that must now take place.

NASA is doing what it can to make the task easier for Europe. Beggs stressed, for example, that it might well be possible to design the cargo hose for the space station in such a way that it could accommodate Hermes, a small, manned shuttle which the French are hoping to develop for use with the expanded version of Ariane.

He also emphasized the opportunities that the space station would offer for the development of advanced techniques in robotics and telecommunications.



An artist's concept of a space station

Stanford stands firm over centre

from Charlotte Beyers

PALO ALTO

Stanford University's board of trustees has rejected by 22 votes to four terms for a Reagan Public Policy Centre proposed by presidential counsellor Edwin Meese.

The original White House proposal would have put the policy centre under the jurisdiction of the Hoover Institution on War, Revolution and Peace. When Stanford trustees objected to the proposal, Meese offered a compromise calling for an independent foundation to run the centre.

Stanford president, Donald Kennedy, said: "There can be no convincing assurance that a centre organized independently of the university and functioning merely as a lessee would be governed in accord with normal academic standards."

He reaffirmed the trustees' desire to have the university control governance of the $40m Ronald Reagan Centre.

W. Glenn Campbell, director of the Hoover, criticized the board's decision. "Those who have lost in this vote are the many Stanford students, staff and faculty who will not be able to benefit from the outstanding conference facilities and the association with the many distinguished national and international scholars who will spend a year or more at the centre," he said.

Kennedy noted that the Stanford board had sent Meese a "cordial reply" to reassure him of the university's enthusiastic wish to proceed with the Reagan library.

Swedish aid

The Swedish Agency for Research Cooperation with Developing Countries (SAREC) has agreed to provide Swedish Kroner 3m for scientific university research in Sri Lanka.

Projects include a buffalo farm, inland fisheries research, a zoological survey and research in social science and humanities programmes.

Australian row over high pay

from Geoff Maslen

MELBOURNE

The Australian government has "fined" 13 higher education institutions more than A$250,000 for overpaying some of their senior academics.

Deductions totalling A$259,000 will be made from federal government grants this year to 11 universities and two institutes of technology that paid staff more than the amounts recommended by the Academic Salaries Tribunal.

The fines – which range from A$3,000 for the James Cook University to A$175,000 for the South Australian Institute of Technology have caused considerable discomfort among the heads of the institutions and some of their assistants who benefited from the over-payments.

Minister of Education and Youth Affairs, Senator Susan Ryan, said the Commonwealth and state ministers for education had agreed in 1979 that staff covered by Academic Salaries Tribunal recommendations, including university vice chancellors and college principals, should be paid those rates and no more.

She used a piece of legislation introduced, but never put into effect, by the former Fraser government to make the cuts. Her action again demonstrates the myth of institutional autonomy in Australia and the fact that the Commonwealth, as the main provider of higher education funds, can exert its will on institutions as it wishes.

Senator Ryan had warned the institutions last year to scale down the salaries paid to senior academics to the levels recommended by the tribunal, or face the consequences. Melbourne, La Trobe, Macquarie, Wollongong, Queensland, James Cook, Griffith, Adelaide, Flinders and Murdoch universities, along with the University of New South Wales, the Western Australian Institute of Technology and the South Australian Institute, are now suffering the consequences.

The vice chancellor of Melbourne University, Professor David Caro, said his two deputy vice chancellors had been appointed and their salaries determined before the decision was made to hold salaries at tribunal rates. "It is quite ridiculous with this university's budget of A$100m that we have to fool around with an A$8,000 fine," he said.

A spokesman for La Trobe University said its vice chancellor, Professor John Scott, was paid A$4,000 more than the figure set by the tribunal but this was justified because Professor Scott had no deputies.

Generally heads of institutions are extremely well-paid by Australian standards. The tribunal grades universities into two classes and has recommended the seven vice chancellors of the major metropolitan universities be paid A$66,500 a year and the other five A$61,600.

These figures do not necessarily reveal the vice chancellors actual salary package. Many universities provide their academic heads with houses, servants, cars and expense accounts.

A spokesman for the Federation of University Staff Associations said the federation had no quarrel with the Commonwealth's action. But if the Commonwealth insisted that universities should not pay above the recommended salary levels, it ought also to legislate to ensure that institutions could not pay below them. Although all institutions generally abided by the tribunal's recommendations, universities were not obliged to pay their staff at those levels, the spokesman said.

Irish college rules out student increase

from John Walshe

DUBLIN

Eire's biggest educational institution has bluntly stated that it will not be possible to drastically increase student intake.

Education minister Mrs Gemma Hussey, had hoped that the existing institutions could cater for more students with little additional investment. But this has been ruled out in a memorandum from University College, Dublin which in 1982/83 had 10,011 students – 8,723 full-time students and 1,288 part-time students. Of those listed as part-time, 600 were taking evening arts or commerce degrees. There were also 4,000 extramural students.

The memorandum prepared by the college president, Dr Thomas Murphy, rejects the idea of dual entry or a double intake of students each year.

He says there appears to be a current view that as the teaching year extends over only 25 to 26 weeks it should be possible to admit students twice annually, and to complete the course for both groups of students in the one year.

But this is not possible; says Dr Murphy. In nearly all departments, June and September are taken up with the marking of scripts, correlation of results and examination board meetings.

In all large departments most of the staff are involved during July with the matriculation examination.

Dr Murphy's memorandum says there is no question of increasing intake into medicine, veterinary medicine, agriculture, architecture and law. The intake of students is sufficient, or more than sufficient to meet the needs of this country in these professions.

This leaves four faculties: commerce, arts, science and engineering.

Turning to commerce, he says the present staff/student ratio at 1:27 is poor. But it might be possible to take into an extra 300 students at a current cost of £300,000 per annum.

In arts, the ratio is 1:18.5 but this masks considerable variations, such as 1:20 in philosophy to 1:34 in psychology.

Artists suffer from heavy brushwork

In recent months, the Canadian media has given extensive coverage of Revenue Canada's heavy-handed dealings with artists, faculty members and writers. Well-known artists have been advised by tax assessors to destroy unsold works in order to speed the allowance of deduction expense; members of fine arts departments have been reassessed by thousands of dollars because their artistic endeavours have been deemed to be really a "hobby".

Journalists and opposition politicians have discovered, moreover, that the tax department sets quotas for collectors, and bases employee evaluations on the amount collected and the number of successful reassessments. Obviously, the financial hazards for faculty and artists are serious and unpleasant; a more serious concern, however, is the realization that this harassment is a symptom of a complete lack of understanding on the part of the federal tax department as to how artists, writers and academics function.

In the area of research expenditures, the Canadian Income Tax Act provides that research expenditures are deductible from research grants. Monies received through a research grant from which research expenditures are not deducted is taxable as regular income.

Problems arise when the grant is insufficient or there is no grant and research expenditures are incurred. When this happens to an academic, who is expected by his or her employment contract to conduct research and engage in scholarship, the employee is forced to pay for such research expenses out of employment income.

The Canadian Income Tax Act does not allow for research expenses to be deducted from such income. The underfunding of Canadian universities in effect, forces academics to subsidize the state education system.

A second problem area arises from the fact that in Canada, a large number of writers and artists have had to supplement their income by teaching in universities. This has meant that students have a unique opportunity to be exposed to some of our best artists and writers.

By accepting this employment, however, these artists and writers now find themselves in a Catch-22 situation if, in the opinion of the department, the artist is not commercially viable, the department declares the individual to be a "hobby" artist.

It is clear that the federal government has not developed a coherent policy towards artists and scholars employed by universities. On the one hand, a number of government departments and agencies provide financial support for the arts, university research and scholarship, but on the other, Revenue Canada's restrictive rulings reduce the value of such aid.

It is clearly inconsistent on the part of the government to call for the development and protection of the arts in Canada and at the same time to countenance the singling out of artists and writers by disallowing deductions for professional expenses. It is similarly inconsistent to provide tax incentives to encourage research and development and then to tax in a restrictive manner employees such as academics who conduct much of Canada's research.

Ron C. Leyesque

The author is associate executive secretary of the Canadian Association of University Teachers.

overseas news

Polish opposition warned

The Polish authorities will never give their consent to opposition activities in universities and colleges. Deputy Prime Minister Mieczyslaw Rakowski has warned. Mr Rakoski, formerly editor of the relatively liberal weekly *Polityka*, frequently acts as government spokesman on matters relating to the intelligentsia.

His latest pronouncement was made during a "public debate" at Poznan Technical University, at which representatives of the various higher education institutions in the city discussed Rakowski's new book *Difficult Dialogue*. This is a collection of all his major pronouncements and press articles since the beginning of martial law.

Rakowski noted in particular that some members of the student community considered the new law on higher education as a "sign of the authorities' weakness". This law was drafted during the Solidarity period, and was then promulgated, in an emasculated form, in May 1982. It contains a number of guarantees of university autonomy.

Students who felt that the concessions granted by the new law could be "abused for the struggle against the socialist state" were, said Rakowski, "labouring under a "gross misapprehension". He appealed, therefore, to all university lecturers and professors "not to bring up young people in a spirit of resistance to their own country".

This injunction seems to refer to the "self-education circles" advocated by the Solidarity underground. While the specific activities of such circles are not reported in the underground press, some idea of their scope can be obtained from a catalogue of textbooks published by the ZEN (National Education Books) published press.

By the end of last year, four works had appeared: *Economic Crisis in the Polish People's Republic, Independent*

Mr Rakowski: appeal to lecturers

Education, The Events of March 1968, and *Tolerance*, plus a handbook on the teaching of courses in history, sociology, psychology, religious affairs, literature, economics, philosophy and the affairs of the Soviet bloc.

Nine further works are at the printers, five in preparation and 16 more intended. Titles include Solzhenitsyn on *Peace and the Use of Force*, Bukovsky's *Pacifists against Peace* (reprints of western editions), Vaclav Havel on *The Strength of the Powerless* (translated from Czech), Robert van Vorens on the political misuse of psychiatry, and the Kennedy-Khrushchev letters on the Cuban Crisis.

Apart from warning the academic community away from dissent, Rakowski offered a small carrot in the promise that moves will be made towards improving the living standards of Polish academic circles "if possibilities emerge". This, presumably, means if, in his words "peace and order is secured in Poland in conditions of international competition, growing distance and technological gap, in removing the conditions of crisis".

For academic scientists, the threat of a gap between Polish science and the leading edge of world science is becoming a matter of increasing concern. Last December, the outgoing president and academic secretary of the Polish Academy of Sciences warned of this danger in their report to the academy.

To the academics the threat is primarily one of information – the economic crisis meant the curtailment and finally the cancelling of funds to subscribe to foreign journals, while martial law meant severe restrictions on foreign travel and exchanges.

This concern on the part of the academics has provided the authorities with a means of exerting pressure on scholars. A particularly blatant case of such pressure was reported recently, by several underground Warsaw newspapers, concerning the scientists formerly employed at the Swierk Nuclear Research Institute near Warsaw.

This institute has had a strong Solidarity chapter, which, in December 1981, staged a strike protesting against the imposition of martial law. In reprisal, the institute was split into three new bodies, and the more militant Solidarity people were thus eased out, during the reshuffle, without formally contravening the labour laws on dismissals. Recently, however, the authorities have indicated that they would be willing to restore the status quo at Swierk provided the scientists would perform certain "political initiatives".

These include persuading Western editors which published accounts of the dissolution of the institute that it never took place, and writing articles to *Polityka*, based on materials supplied by the Party, giving the "correct view" concerning Polish scientists sent abroad on official trips who have overstayed their visas and are now working in the West.

Strike threat withdrawn

from Donald Fields

HELSINKI

More than 1,500 professors and associate professors in Finland have withdrawn a threat to strike next month despite failing to achieve the radical improvements they were seeking in pay and research conditions.

It had appeared that widespread dissatisfaction among less senior grades of university staff would encourage AKAVA, the federation to which the professors' union belongs, to take a lead. But this week they accepted a settlement which fell far short of their aims.

Ms Leena Lähteenmäki general manager of the professors' union said that since 1970, when formal working contracts were first instituted for civil servants and academics, the pay of Finnish professors had plummeted by one-third in real terms. Government officials had forfeited "only" 18 per cent while industrial workers, the chief gainers, had almost closed the once-yawning gap on their counterparts in neighbouring Sweden.

"You can see that the best people are not ending up in the universities by the 200 or 300 professorships that remain unfilled, above all in the technical and commercial sciences," said Ms Lähteenmäki. "In the long term the lag in pay could mean professors of a lower standard."

The union has not been able to assess the number of brains drained away from Finnish universities in terms of potential professors lured into attractive research posts in private industry or seduced by better conditions in other countries. But it is bound to be considerable. After 15 years spent acquiring the academic qualifications needed by professors the Finns find themselves worse off than their Scandinavian equivalents – though grumbles on this score are now highly audible in Sweden and Denmark as well.

Tax scales are similar to those in Britain. But since the Finnmark is grossly overvalued *vis-a-vis* sterling in cost-of-living terms, comparisons are fairly meaningless. What rankles with many Finnish professors is that after ten years of rising from a starting scale as low as £1,080 to a maximum of £1,690 they may still be well over £1,000 a month behind a small-town manager appointed for little more than party loyalty and a penchant for political intrigue.

Another problem is a snowballing of the paper-work performed by professors – a drain on time and energy that could be better spent on teaching and research.

Lecturers' stampede is halted

The resignation of Serbian and Montenegrin lecturers from Pristina University in Yugoslavia has been halted Dr Hajredin Hoxha, rector of the university, announced recently.

He was speaking at a ceremony commemorating the fourteenth anniversary of the university, founded in 1970 to provide a centre of higher education for Kosovo province, which has a large Albanian population.

In 1981, student unrest began as a demonstration about poor canteen and hostel facilities and escalated into pro-Albanian riots. They demanded that Kosovo should have the status of a full member republic of the Yugoslav federation or even become totally independent, prior to a possible union with Albania.

This led to the temporary closure of the university, the severance of cultural ties and exchanges with Tirana, and a tightening of communist party control at Pristina. Lecturers and students considered to be too pro-Albanian were dismissed and expelled.

At the same time, Serbian and Montenegrin lecturers at the Pristina alarmed by what they considered to be the "anti-Slav" attitude of the local population and the student body found themselves posts elsewhere.

The lack of these lecturers was at first less apparent, since at the beginning of the 1981/82 academic year the vast majority of freshers opted for Albanian as their language of instruction. Nevertheless, at one time, there were no less than 178 Albanian lecturers giving classes with Serbo-Croat as the language of instruction.

Now 114 of these have been replaced by lecturers for whom Serbo-Croat is their native language and the other Albanian lecturers are only teaching small groups of Serbo-Croat speakers. At the same time, 69 Serbian and Montenegrin lecturers are teaching Albanian students.

Reviewing recent events, Dr Hoxha said that there had not been a single demonstration of Albanian nationalists at the university during the past year. He noted that the university, which had only 100 students at its foundation, now had 40,000.

This figure, is somewhat doubtful. During the 1981 riots, it was decided that the university had grown too large, with 45,000 students on its books. Intake must be severely limited, it was resolved, until the original target of 10-15,000 was restored.

Careful investigation revealed, that not more than 25,000 of the registered students were actually attending the university full time or at all. The number had been inflated by including part-timers, drop-outs and recent graduates whose names still remained on the rolls.

How health care cash is wasted in US

from E. Patrick McQuaid

WASHINGTON

American consumers are footing the bill for $60 billion each year in health care gadgetry and untested therapies they haven't bargained for.

A special committee of the Congress exploring health care costs learned last week from a panel of expert witnesses that up to that amount could be saved annually by investing "a few hundred millions" into the careful evaluation of new technologies before they were marketed.

There was also the strong suggestion from panellists and individual legislators that Americans have president Ronald Reagan to thank for the present and costly state of affairs. The cost of staying fit last year hit a whopping $322.4 billions, up 12-fold from 1960 figures.

Harvard Medical School's Dr Arnold Relman, who is also editor of the authoritative *New England Journal of Medicine*, speculated that an immediate "five to ten billion dollars a year" could be saved through implementation of a clinical trials policy for new therapies. This money, he said, "is presently being wasted on medical technology that could clearly be shown to be useless, redundant, or even dangerous".

A number of American universities, medical schools, and agencies in both the public and private sector have carved out a role in medical technology assessment, but, witnesses testified, no coherent system for evaluation in all classes of technology exists and the government, which picks up the tab for the bulk of the nation's health care, lacks the basic information it needs to be a prudent consumer.

But this has not always been the case. In 1978 the National Centre for Health Care Technology was set up under congressional mandate to review new treatments and advise the health care financing administration on decisions to cover or not cover developing technologies under the Medicare programme.

According to Dr Seymour Perry, director of the centre until the Reagan government shut it down in 1981, of the 75 new technologies studied, 40 per cent were found to be "ineffective" and "without benefit to the patients".

After dismembering the National Centre for Health Centre Technology, the Reagan administration assigned all of its duties to the under-staffed, over-burdened Office of Technology Assessment, a wing of the Federal Health Ministry. Four professionals – two registered nurses and two research assistants – are the only office employees working on assessment issues, panellists told the Pepper committee. Hampered by limited funds, the office does not conduct clinical trials, nor does it calculate economic, ethical or social considerations.

David Jobbins visits the Common Market's European University Institute near Florence

The ideal setting

The European ideal is an enduring concept despite the recurrent Common Market budgetary crises and the failings of its agricultural policy.

To its most ardent supporters in the early 1950s, economic union was only a transitional step towards the creation of a single European state.

Not surprisingly the grand simplicity of that early idealism has been transformed into a morass of division and conflict not only about the means but also over the aim.

But manifestations of the original ideal still remain – among them the European University Institute on the outskirts of Florence.

With 135 graduate students and an expanding research programme, the institute represents a tangible expression of the value attached to exploring the similarities and the differences between the cultures of Europe by the pioneering Six.

But even its closest friends accept that in Britain the institute is not as well known as it should be, and that a higher profile for its activities is urgently needed to enlarge the pool of highly qualified graduates from British universities and polytechnics from which its students are selected.

Its principal, Professor Werner Maihofer, visits Britain next week to reinforce existing links and help build new ones. His visit begins with a courtesy meeting with Sir Keith Joseph, Secretary of State for Education and Science, and continues with a tour of universities including the London School of Economics, Edinburgh, Bradford, Manchester, Warwick and Oxford.

Also on the programme are discussions with the chairman of the Economic and Social Research Council, Sir William Hague, and a meeting with representatives of the Committee of Vice Chancellors and Principals.

Professor Maihofer, a distinguished academic lawyer and for two years rector of the University of Saarland, is no stranger to diplomacy. A member of the West German parliament from 1973 to 1980, he was from 1974 to 1978 minister of the interior in the government of Helmut Schmidt. He succeeded Dr Max Kohnstamm as principal of the institute in 1981.

The idea for a European higher education institute was put before foreign ministers of the then six members of the EEC at the 1955 Messina conference, but it was December 1969 before outline plans were approved by the Hague summit conference.

Almost three more years elapsed before the convention establishing the institute was signed by the original six, followed later by Britain, Denmark and Ireland. And it was 1976 before the first 67 students were admitted. Yearly admissions then stabilized at around 40, with total numbers reaching 135 in the current academic year. But a significant expansion is planned, with a target of 250 by the end of the decade.

Nestling near the foot of the hills surrounding Florence, the institute's setting has few rivals. Housed in the Badia Fiesolana, the cathedral of the small town of Fiesole until 1028, and later held by a series of religious orders, the institute readily bridges the centuries, housing both the research computer, a computerized library and in the refrectory, now used by students for study, a fine seventeenth century fresco.

The treasures of Florence are a brief bus ride away, most students and staff living in flats in the city.

The original plan had been to offer both graduate and undergraduate level courses but careful consideration during the 20-year gestation period and the changing fortunes of the EEC and its member states led to any ideal of first degrees being dropped. The institute currently offers only opportunities for three years of graduate study leading to a doctorate – the first awarded in 1979.

From September, one of the four departments – law – is to offer a one year master's degree. But the others have no plans to follow suit, one already having rejected the idea.

The institute's academic shape was determined by the 1972 convention which identified four departments: history and civilization; economics; law; and political and social science. But the same convention guaranteed its academic freedom and gave its governing body, the high council, power to set up new departments or vary the existing arrangements.

The convention declared: "The aim of the institute shall be to contribute, by its activities in the fields of higher education and research, to the development of the cultural and scientific heritage of Europe, as a whole and in its constituent parts. Its work shall also be concerned with the great movements and institutions which characterize the history and development of Europe. It shall take into account relations with cultures outside Europe."

It was intended that the institute would become a forum for the exchange and discussion of ideas and experience falling within those areas.

Certainly the academics on its permanent staff – there are currently 20, six of them from Britain – are in broad agreement that freed from the distracting demands of undergraduate teaching they are able to gain enormously from the culture clash between different scientific and linguistic traditions.

Professor Maihofer finds the early decision to concentrate on the social sciences "absolutely convincing and logical".

"Our experience reinforces these structural decisions. Elsewhere in Europe, besides perhaps the UK and France, the postgraduate aspect is very underdeveloped. University reforms in Germany and Italy – and even in France to an extent – have concentrated on the undergraduate level."

A common theme among the professorial staff is the value of the multicultural, multilingual transnational dimension the institute provides.

One described it as the almost existential experience of working with differing scientific traditions, and Professor Stuart Woolf, professor of history at Essex University, and now in the department of history, says: "I find it immensely stimulating. There are deep and unwritten failings of character which come through when working alongside colleagues from different countries and I find it very stimulating to be faced with this because it makes me more conscious of the limits of my own approaches."

"Largely because of the value attached to this dimension, there is general acceptance that it would be a mistake to offer tenure to academics at the institute. Appointed initially for three years with provision for renewal up to seven, most have retained connexions with their former universities which will enable them to return.

Despite competing national pride, Professor Maihofer has found no evidence of attempts by the supporting countries to ensure the appointment of one of their own professors.

At present the permanent complement of professors stands at 20 but two chairs in international relations and cultural history are in the process of appointment.

Running costs are shared between nine of the members of the EEC, Greece so far excluded. A formula to share the burden was incorporated in the convention, with France, Germany and Italy contributing 28 per cent each, Belgium and the Netherlands 7.9 per cent, and tiny Luxembourg just 0.2 per cent.

The accession of Britain, Denmark and Ireland allowed the burden to be spread more widely with France, Germany, Italy and Britain now contributing 21.16 per cent, Belgium and the Netherlands 6.04 per cent, Denmark 2.47 per cent, Ireland 0.62 per cent and Luxembourg still the smallest share with 0.19 per cent.

Since 1982 the EEC itself has also made a contribution towards the institute's activities, a move regarded with suspicion in some quarters as a step on the road to reduced autonomy. The £13,000 received from the EEC in that year rose to more than £62,000 last year, but continuing support from this source has met only with the opposition of British Conservative European MPs.

The proportion is small – about 15 per cent and the money spent on largely neutral areas – language training, the library, the research computer, and in particular to fund 10 12-month Jean Monnet fellowships which were launched in September last year.

There is according to Professor Philippe Schmitter, head of the department of political science, a great deal of resistance to the idea that the institute might become a European Brookings, a think tank for Eurocrats and the community to feed with specific policy problems.

With these anxieties in mind the decision to establish a policy unit within the institute to act as a clearing house for the consideration of European community short-term problems is being carefully watched.

But Professor Maihofer sees the development as necessary to counterbalance the effect of the departmental structure as a barrier to interdisciplinary research.

"Besides long-range research projects we should also encourage some short-term policy-orientated activities," he says.

The institute, Professor Maihofer believes, offers an unparalleled opportunity for independent academic advice free of national partiality.

"In some months' time there will be a conference to bring together the most competent people to see what can be done to overcome the obstacles to European union – what are the ideological problems and what are the technical ones," Professor Maihofer, a firm supporter of union, says.

Many of the long-term research programmes are of direct relevance to the problems of the EEC. The institute's academic philosophy is firmly in the comparative tradition, most strongly evident in the department of political and social sciences. Its current main research preoccupation, the future of party government, is a logical progression from an early study of changes in western European party systems, and has been extended further by Professor Ian Budge into the detailed study of mechanisms of party government.

One interest developed by Professor Schmitter deals in part with the demise of authoritarian rule and the prospects for democracy in southern Europe, currently of particular interest to the EEC because of the recent histories of Spain, Portugal, Greece and Turkey.

In the department of economics, one theme of research concentrates on the theoretical foundations of decision making at national and international level, while another examines the management of structural change and a third, worker participation in western European industry.

Its head, Professor Mario Nuti, says the department displays its common Keynesian heritage with "more than a pinch of salt".

"We do not identify ourselves with a particular school. Most of us have had a connexion with Cumbridge but you would not find either extreme monetarists or extreme Keynesians."

The widest span of interests is to be found within the department of history and civilization. It ranges from the fifteenth century with a study of Venetian patents over a 300-year period to a comparative study of multinational enterprise in Germany, France and Italy in the first 30 years of the current century.

But a key area for long-term research hinges on the decision by the EEC to release its papers under a 30-year rule and that they should be held at the institute. Professor Alan Milward, professor of European studies at the University of Manchester Institute of Science and Technology, is spearheading an investigation into the economic origins of the EEC in the immediate post-war years.

In the law department attention has focused on the possibilities of European legal integration, with a long-term study on the American federal experience coming to an end this year, although a parallel examination of the economic functions of the welfare state continues.

One problem facing the institute is the reconciliation of the goal that students' projects should fit in with the continuing mainstream research within the departments with the desire for the best potential students.

It has been acknowledged that occasionally students are accepted with research proposals bearing at best a tenuous link with the research programme, and the institute's decision-making bodies are soon to consider how to correct this tendency.

Another problem to be resolved is that of supervision. Students complain that the short periods academic staff remain at the institutes – they are on three-year contracts renewable up to seven years – means they may be left without supervisors for their theses.

Professor Maihofer accepts that this is one of the structural problems, but agrees with most of his staff that a relatively rapid turnover is central to the continued academic vitality of the institute. But plans are afoot to strengthen the supervisory responsibilities of academics when they leave and perhaps to reinforce procedures.

This concern at the low numbers of applicants is not restricted to Britain. France which shares the same proportion of the costs this year has only 13 students compared with Britain's 18. Professor Maihofer has recently visited France, on the same sort of mission.

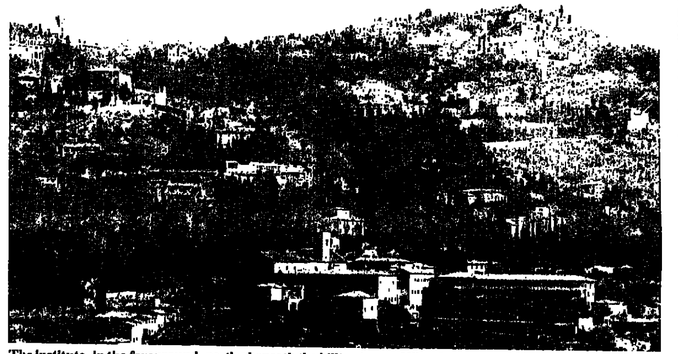
The largest single group is Italian with 34, followed by West Germany with 28, and Britain trailing third. Of the smaller countries, Denmark has seven, Ireland four, and Luxembourg just one. Four students are currently from outside the EEC.

Students receive grants from their own countries to cover their first and second years, while in the final year they are maintained from institute funds at a level equivalent to the highest national grants.

None of the three British students to whom I spoke felt the grant was ungenerous, although accommodation in Florence is notoriously expensive.

Professor Maihofer feels that despite the progress of the past seven years the institute has not yet realized the ambition of its founders.

"It is quite astonishing that after only seven years we have reached this stage. I can only wish we could have the same progress in the next seven," he says.



The Institute, in the foreground, nestles beneath the hilltop town of Fiesole

The cloisters of the ancient Badia Fiesolana, home of the Institute

Should Australian academics expect or have to carry out research? Geoff Maslen reports

Sacred cows slaughtered

Professor Michael Birt, recently elected chairman of the Australian Vice Chancellors Committee, has made some highly controversial proposals which would transform the nature of universities and colleges of advanced education.

He has proposed, for example, that universities should abandon their belief that all academics should conduct research. Universities could no longer afford to support creative research by every academic, he said, nor were all academics capable of such research.

Under the present straitened financial circumstances facing universities, it was impossible for them to support both young scholars beginning their research careers, and those at the height of their research powers, Professor Birt said.

"To say that every staff member coming into a university not only can expect, but is expected by the institution to remain an active researcher worker for 30 or 40 years is just unrealistic".

There was a need to redefine the responsibility of academics and the way their work was assessed for promotion purposes. "We ought to say to each new staff member: 'The university expects you to become a scholar and to remain one. As a result of your scholarly understandings you will be a good undergraduate teacher and you will contribute to the research effort during your career – sometimes as a researcher, but at other times being in touch with a research group, providing ideas, acting as a critic, and so on'".

Professor Birt controversially endorsed the Hawke Labor government's controversial centres of research excellence. The government allocated A$16m to set up ten of the centres in 1982 and created a storm of protest among academics – especially from some of the 317 applicants who missed out.

But Professor Birt thinks the idea was a good one. "I think it was a step in the right direction. The number of people of real brilliance as research workers in their field is necessarily limited, as is the opportunity to support them adequately in a country like Australia."

Professor Birt is vice chancellor of the University of New South Wales after a career as a successful researcher in biochemistry. He has PhDs from Melbourne and Oxford universities and was a senior lecturer at the University of Sheffield in what he describes as "great years, marvellous times".

At 35, in 1967, the then Dr Birt was appointed foundation professor of biochemistry and head of department at the Australian National University. Within six years he was offered the position of vice chancellor at what was to become the University of Wollongong. After another five years he got the job at New South Wales.

Australia's 12,000 university academics spend much of their time planning their research activities, applying for grants to support it, carrying it out and writing papers about it, attending conferences to discuss their results, as well as simply teaching undergraduates about what they have discovered. Most believe that their reputations and promotion prospects depend on their research.

But Professor Birt was adamant that the emphasis ought to be on an academic's scholarship, not research productivity although he admitted it would be difficult to devise suitable means of assessing the scholarly performance of staff.

Funding of academic activity would also be difficult because much of the money universities spend on research is included in their general recurrent grants from the Commonwealth.

"Universities would receive a basic grant for their scholarly and teaching activities but any research carried out would be funded almost as it is by the Australian Research Grants Scheme, with academics seeking research money project by project, group by group, for a finite period."

Professor Birt has also called for a restructuring of higher education that would create a tripartite system quite unlike the present one. This would consist of vocational colleges to provide for technical and specific job training, arts and science colleges that would offer a general education in the humanities, social sciences and natural sciences, and universities which would deal with the learned professions and vocations.

The roles of the three new types of institution would be markedly altered. The "vocational" colleges would take over one of the present duties of the advanced sector by training specialists in service in particular vocations on graduating.

The arts and science colleges would offer courses designed to "serve the social function of providing a generally well-informed and well educated service sector". These colleges would meet two other needs; the provision of courses for the personal enrichment of mature students, and bridging courses for those wishing to go on to university.

Universities would provide intensive courses in basic humanities, social sciences and sciences. Students in these fields would be those intending to enter academic employment, research or scholarly activity after graduation. If universities were to develop in this way they would place more emphasis than at present on postgraduate training and research in all fields. They might also become smaller and fewer in number.

Although Professor Birt's ideas have been subject to some criticism, he said he had put them forward to provoke thought before the Labor government in Canberra considered a massive expansion in the number of university and college places in their present form. The Commonwealth is now proposing just such a massive expansion.

Many of Professor Birt's reformist notions are not widely shared by his fellow vice chancellors.

"They're unpopular, there's no doubt about that. I've discussed my views about changing the role of research in universities with my colleagues and while I may turn my back occasionally I don't do so often when I'm talking about that."

Members of the University Grants Committee are not elected. Lucky for them. If they were, their dismal record of winning their constituents' assent to decisions over cash allocations between universities would have lost most of them their seats long ago.

So what is the UGC to do when it tries to decide, not between universities, but between individual departments? For that matter, *why* is the committee coming down to this level? British oceanographers are currently the guinea pigs in an exercise which should answer these questions.

For oceanography, the why turns out to be fairly straightforward. The full UGC has accepted a recommendation from its physical sciences subcommittee that resources be concentrated in two departments instead of the existing four – at Bangor, Southampton, Swansea and Liverpool. A high-handed piece of rationalization, you say? A dry run in a small subject to set the style for sweeping changes in more established disciplines? Committee members deny it. In fact, if pressed, they say oceanographers asked for it.

And so they did. Not, you understand, that they asked for university resources to be pared away year by year by an unsympathetic government. But they feared that if this process continued the four rather small departments which are their discipline's only foothold for university research and teaching might disappear without anyone noticing. According to Professor John Simpson at Bangor: "Oceanography is never going to bring in the big battalions in the undergraduate world. We were worried that any of the departments could be seriously damaged by a few random retirements or frozen appointments after departures for new jobs".

The worry took hold in 1981 and at first it looked as though a solution could be found to the classic conflict of academic loyalties immediately raised – between an institution or a subject. There followed a long and tangled courtship between prospective partners. "Everyone has talked to everyone else," according to one observer. The most serious discussions arose between Bangor and Southampton and Swansea and Southampton. But merger talks always foundered on the crunch question of location. "Your place or mine?" stops being funny when the wrong answer means selling your home and moving your family to another part of the country.

Enter the UGC. They accepted the logic of the inter-university discussions. Here was an important subject – with practical implications for shipping, development of marine resources including fish, minerals and oil and gas, and studies of pollution and waste disposal, as well as the intrinsic interest of the seas covering two-thirds of the earth's surface. An expensive subject, too, it appeared. Direct ocean observation depends on ships or satellites, and satellite data, especially, is placing more demands on computer processing. The oceanographers' own protracted efforts had put consolidation on the agenda. All right, said the committee, if you can't do it, we'll do it for you.

How? Two questions, really; one procedural, one methodological. Procedure was relatively easy to find. The UGC set up a small group, rather like a normal visiting group to collect information and visit the four departments. This group (which does not include an oceanographer, although there is an observer from the Natural Environment Research Council versed in oceanography) will report to the physical sciences subcommittee, which will put up a proposal to the full UGC. The universities will then be asked how they will respond to the proposed new arrangement.

The method is harder. It is not obvious what criteria to use in designating two of the four institutions as homes for the oceanography departments of the future. And even if a list of criteria could be drawn up there would be room for dispute about their relative importance. Perhaps the best way to get a feel for the UGC group's approach is to visit the departments, as they have done.

I visited two departments to try this. It was easy to choose which two because there is a political dimension to the decision. Two of the four are in Wales – at the University College of Swansea and the University College of North Wales, Bangor. What effect will this have? The general view is that it would be surprising if one of the chosen departments was not in Wales, but it would be even more surprising if both were.

A visitor comes away from both departments with plenty of information. Naturally, the UGC group have been belaboured with statistics; on student numbers, employment and A level grades, on research grants and publications, and on investment facilities. The two departments have different emphases in teaching and research, and both argue that their own model is a viable base for a larger department.

Swansea, with seven academic staff in post, turns out between 15 and 20 undergraduates with a single honours degree in oceanography each year – the only course of its kind in the UK. And the department teaches joint honours students, as well as supporting around 15 postgraduates. Bangor, with nine academic staff, does not favour single honours in a multidisciplinary subject like oceanography and teaches around 20 joint honours undergraduates each year as well as running two small MSc courses. The joint versus single honours slant goes along with other differences in emphasis, with Swansea placing great weight on practical work in undergraduate teaching and Bangor concerned to train rigorous theoreticians.

Aside from this, the two departments seem more marked by their differences than their similarities, to the passing inquirer. (I spent three or four hours in each, the UGC party an hour or two longer.) Both have smart research vessels, with Bangor's slightly the larger even though they told the UGC it was no longer cost-effective. Swansea's vessel concentrates on coastal work, and like Bangor they use the Natural Environment Research Council ships, based at Barry, near Swansea, for really demanding voyages.

Both departments *are* quite small, but those are not large universities, and both seats of loyal administrators have promised support for development of the subject. Indeed, Swansea's principal, Professor Brian Clarkson, has pledged that he will strengthen marine sciences in general whatever the fate of the oceanography department. Both departments appear to have good links with colleagues in related fields like marine biology and geology. Both will soon be looking for new heads of department, Bangor to replace Professor Jack Derbyshire who retires in two years' time, Swansea to fill their chair now held open on instructions from the UGC.

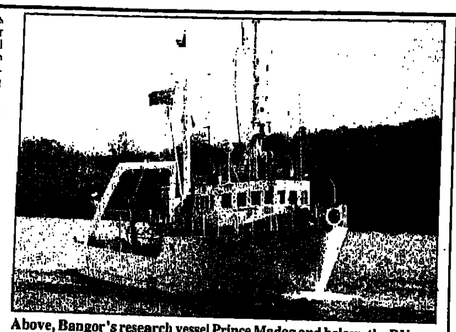
Each location has its geographic virtues. Dr Michael Collins, the present head of department at Swansea stresses the advantages of the long tradition of work on Swansea Bay: "It's like a natural laboratory for us". The data on record mean sediments or marine species wanted for further study can be pinpointed easily and quickly. Bangor can point to ready access to the Irish Sea, where they have developed expertise in study of "shelf seas" near large and small land masses, and to the Menai Straits. An island in the Straits acts as a base for a separate Unit of Coastal and Estuarine Studies.

It seemed to me, anyway, that nothing here pointed clearly to one department. The difficulty is that this is a preemptive move. As both departments are obviously working now, teaching students, turning out new science, winning grants from public and private-sector commissions, they are undeniably viable, at the moment.

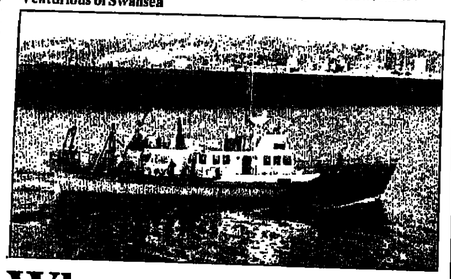
The point of the consolidation is to guard against them falling below some notional threshold of activity sometime in the future. Since the whole thrust of the choice is to channel more cash to the lucky department, the judgment will be self-fulfilling. One response is that these are two perfectly respectable university departments and neither deserves to profit at the other's expense.

However, the members of the visiting group now have to weigh and sift all this information and make a recommendation. So far, everyone has been very polite. The decision-makers are anxious to carry the consent of staff in the departments affected, and they have persuaded most of the waiting oceanographers that they are anxious to strengthen the subject. The uncertainty the whole process creates means that people are wary of speaking their mind to a visiting journalist – no one ventured any criticisms of the other departments, for example.

But with that proviso, the advantage of asking questions now is to gather impressions of the assessment before the winners have been announced. In spite of all the doubts raised, the people whose future is at stake seem reassured by the way their judges set about the task. As a Swansea man said: "I feel happier after the visit, though not because I'm more confident than I was before". Whether this means the final outcome will prove acceptable to the universities remains to be seen.



Above, Bangor's research vessel Prince Madog and below, the RV Venturious of Swansea



Why oceanography ran aground

John Turney follows in the wake of the UGC boarding party

Surviving death from a thousand cuts

Olga Wojtas reports on the state of Aberdeen University's medical faculty

Aberdeen University has a fine, scriptural motto: *initium sapientiae timor domini*, the beginning of wisdom is fear of the Lord.

But recently it has seemed the university might be better to appropriate that nifty publicity line from *Jaws 2*: "Just when you thought it was safe to go back in the water . . ."

First came the fear of bankruptcy, then the threat of compulsory redundancy. Both catastrophes were successfully avoided, and the university was settling into its post-cuts way of life when suddenly the cry went up: "Aberdeen is axing the medical faculty!"

The university had been spared compulsory redundancies largely because 162 academics took voluntary severance, many of them under the Premature Retirement Compensation Scheme. The intention of PRCS was to make permanent cut backs in university staffings: posts lost this way could not be refilled.

The scheme's obvious failing was that early retirements were completely haphazard and could not be guaranteed to fall only in over staffed departments.

Many subjects were badly hit, but none was seen to be in such danger as Aberdeen's medical faculty. It was losing seven chairs, almost half the professorial staff, with two professors reaching normal retirement age and five taking PRCS.

Aberdeen had gone through so many traumas that it took little to spark off panic and paranoia. But the medical school was in an extremely vulnerable position. How could it continue without a professor of surgery, and a professor of obstetrics and gynaecology?

The faculty was also losing chairs in therapeutics, general practice, medicine, pathology and chemical pathology as well as another 18 medical posts, most of them senior lectureships.

Staff knew the government was likely to be seeking cuts in the output of medical graduates; what better way than by axing a medical school? Admittedly the university provided a quarter of local health care, but the University Grants Committee had never been strong on regional arguments.

Matters were not helped by the university facing a bill of several million pounds for repairs to medical buildings. There was some feeling in other faculties that it was somehow the medics' own fault that their buildings were falling down, and it might not be a bad idea to get rid of this albatross round the university's neck.

"There were very strong rumours that the faculty was going to be closed or privatized, and our people were very scared," said one member of the local Association of University Teachers.

However, once the rumours reached the ears of the administration, they were hastily scotched. Committees were established to look at the issue. The chairs of medicine and pathology could be filled since they had not been vacated through PRCS.

This term, the university announced that the chairs of surgery and obstetrics and gynaecology are to be filled. But no decision has yet been taken on the future of the chairs of general practice, therapeutics and chemical pathology. And there has been little publicity of the fact that the chair of surgery has had to be bought back from the UGC so that it can be filled, and obstetrics has been saved by Grampian Health Board.

All applications for early retirement were considered by a small committee of the court. Should it be criticized for allowing so many key staff to leave?

There are few within the university who would say yes. "The university was in a crisis, with compulsory redundancies the alternative to PRCS," says a senior AUT official. "Everybody was so flaming grateful that people were going, that there weren't a lot of questions asked. Maybe there should have been greater discrimination, but I think in a way it was out of the university's control."

There is also the possibility that the university reckoned it could quietly fill the chairs after a decent interval, since the UGC had never specified a time limit for the freeze. But a surprising move while the UGC turned a blind eye is scarcely possible with members loudly demanding to know what the university intends to do about chairs it cannot fill.

This leaves the medical faculty since it is being neither closed nor privatized, coming to terms with a attenuated state. The faculty dean Professor I. M. Richardson, says: "The patients have suffered [illegible] severe amputation and is learning to walk again."

The dean has particular praise for clinical national health service staff who hold honorary university appointments. "There is no doubt the [illegible] added to the teaching load of the remaining staff, and were it not for the enormous help we get in undergraduate teaching from the NHS staff, I don't think we could have carried on."

The university's close links with the NHS and Grampian Health Board have also helped cushion the effects of the cuts on patient care. The UGC understood to think Aberdeen is [illegible] involved in patient care, which is disputed by both the health boards and the faculty.

It is wrong, agrees Professor Richardson, to suggest staff can concentrate on research and teaching and not need to look after patients.

"The information for research often comes from observations made during the care of patients. If you look at the tremendous development in the past 10 years in the control of intractable pain, much of the impetus came from the observation that this was an unacceptable feature particularly of a terminal care."

These arguments did not prevent job losses in the medical faculty. But Grampian Health Board, with money from the Scottish Home and Health Department, has funded six posts to ensure there are no serious gaps in clinical care.

This must be one of the most ludicrous effects of the university cuts. One government department apparently saves money by axing posts, although it has to pay for the [illegible] of severance awards, then another government department is obliged to refill the posts, increasingly at its own costs.

The funding was intended for full time NHS staff, but the health board was so concerned by the disappearance of the obstetrics chair that it argued for money for one of the posts should go towards appointing a professor.

Dr Howie stresses that the SHHD funding has been a unique move, and the board is unlikely to be able to intervene if the faculty suffers further cuts.

Further cuts would also mean a reduced student intake. The home student intake was frozen at 130 for a number of years, and has now been cut to 120. Again, though this has never been explicitly stated, the UGC reportedly thinks Aberdeen has been overfunded, since it has never expanded to its originally proposed intake of 150.

Aberdeen would maintain that geography makes it much more expensive than other areas. It has around the same number of medical students as Leeds for example, but while Leeds has a catchment area of some 3½ million, with half a dozen teaching hospitals, Aberdeen has a catchment area of 500,000 and only one teaching hospital, although it has recently [illegible] some teaching in Inverness, more than 100 miles away.

The medical faculty has still found room for innovation. Funds raised through the university's highly successful development trust will set up an ophthalmology unit, headed by a professor.

But in most of the medical school, says Professor Richardson, "we can't develop, we can only maintain what we've got."

"I've had to watch a good deal of what I've built up here over 10 years decline," he says. And while teaching and patient care have been salvaged, the dean is concerned about research.

"It is in the research effort that the cuts have had the most penetrating effect and there is no doubt at all that it has slowed down with some new projects having be shelved."

Examining the system

Ngaio Crequer talks to Professor Philip Reynolds (left) about the CVCP's standards group

A code of practice governing the external examining system in the universities is shortly to be published by the Committee of Vice Chancellors and Principals.

It is a code of practice, rather than the slightly stronger code of conduct, no doubt because of the disabling horror which seizes the CVCP whenever it appears they might be telling the universities what to do, or speaking for them.

But it is the first fruit of the group on academic standards set up by the CVCP at the end of last year. Its remit is "to study universities' methods and procedures for maintaining and monitoring academic quality and standards" and it was set up in the context of the letter from Sir Keith Joseph, the education secretary, to the University Grants Committee, which launched the "strategy" great debate.

The letter only briefly referred to standards, asking what prospects there were for more radical changes directed to the maintenance and improvement of quality in the context of a more efficient use of resources.

But the vice chancellors have not ignored Sir Keith's constant calls elsewhere for higher standards, and his attempts to introduce methods, most particularly in the schools, to sieve the good from the bad.

Quality control is the issue of the moment, too, in the polytechnics. They are pressuring for more internal control over validation and the design of courses. At the same time there is debate over the proposal by the Council for National and Academic Awards to provide data for the quality ranking of colleges and polytechnics.

The university group is one of three set up by Lord Flowers, shortly after he became chairman of the CVCP, and is an attempt by him to meet some of the public criticisms of the universities.

But neither he, nor Professor Philip Reynolds, chairman of the standards group, accepts that they are merely trying to nip in the bud any future Government plans.

Professor Reynolds said: "We think the Secretary of State's concern is a proper one. There is a large amount of public money being provided to the universities. We think it proper that he should wish to be satisfied that standards are being maintained at the highest level. We wish to be satisfied of that ourselves."

The group began by a review of the external examining system, firstly to find out how practice varies.

"The critical questions about good practice are: how are examiners selected? What roles are they encouraged or required to play in relation to examining, the conduct of examining boards and their relation to degrees, whether examiners are asked to write reports and who gets them, and whether opportunity is taken to have discussions about curriculum and the nature of provision for degree questions," said Professor Reynolds.

"Examiners need to know, for example, if they have a veto on classification. I would not accept an external examinership if I did not have one. I do not think the system should be undervalued, it just works unevenly. Most external examiners take it very seriously."

But Professor Reynolds would not accept that there is a need for external validation of universities, such as an extension of the practice whereby HMIs look at university education departments.

"When HMIs are invited to education departments their concern is with professional content, not academic content, and in that field they are better qualified than anyone else to make judgments.

"Degree level work is constantly changing. I think it is unlikely that anyone except a university physicist in physics research, understanding how the subject is moving forward, could be qualified to make judgments about a degree programme in physics."

To the criticism that if there are serious question marks about university courses, or poor performance by staff nobody would ever find out, Professor Reynolds points to the role of the student as watchdog.

There is constant interaction between staff and students, criticisms can be made at departmental meetings and students can be very free in their "alternative prospectus", he says. "I have known many cases where students call attention to how courses are run."

But he also makes the point that diversity is of utmost importance, and judgment must allow for it.

"There is a good deal of advantage in variety of method in teaching. For example, in the sciences there is a great range of material that must be covered so the most economical way is lecturing.

"In the social sciences there is more need for dialogue so you lecture less and have more seminars. When I was head of a department I was chary of saying 'have more lectures or less'. Variety is valuable, it extends the range of students."

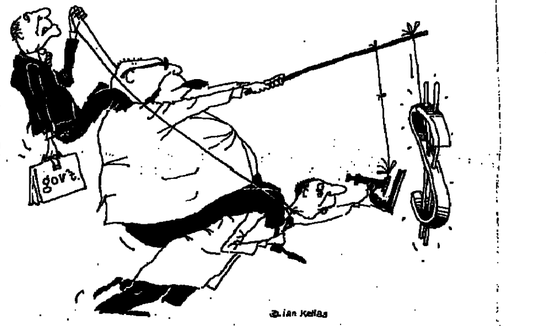
The group is now going to look at four other areas:

- Other external review procedures, including the peer review system and academic advisory committees.
- The procedure for the accreditation of degree courses by professional bodies.
- University method and procedures for the supervision of postgraduate work.
- Universities' internal procedures, including those relating to validation of courses in colleges in the public and voluntary sectors.

The membership is; Professor R. J. Blin-Stoyle, FRS, department of theoretical physics, University of Sussex; Mr H. H. Burchnall, registrar, University of Liverpool; Professor D. C. Freshwater, department of chemical engineering, University of Technology, Loughborough; Dr J. H. Horlock, FRS, vice chancellor, Open University; Dr D. J. E. Ingram, vice chancellor, University of Kent; Sir James Lighthill, FRS, provost, University College London; Professor G. P. McNicol, principal, University of Aberdeen; Professor R. Quirk, FBA, vice chancellor, University of London; Professor W. V. H. Rogers, department of law, University of Leeds; Professor G. D. Sims, vice chancellor, University of Sheffield; Mr K. V. Thomas, FBA, reader in modern history, St John's College, University of Oxford.

Private v public enterprise

Drug companies and universities in America are increasingly in dispute over the right to control their discoveries. Selina Hunt reports



Who owns science? The question seems less odd today than it would have a decade or even five years ago. In technologically advanced societies professional scientists no longer assume that they alone control the fruits of their labour, or that their discoveries will eventually become public property serving the public good.

Consider, for example, the long running quarrel in the United States between the University of California and the drug firm Hoffman-La Roche over ownership of the technique for making Interferon from the KC-1 cell line.

The cell line – taken from a leukaemia victim to help research on cancer – was developed in the late 1970s by two scientists at the university. They sent a sample to a colleague in the National Cancer Institute, who noticed that it produced a low concentration of Interferon, the body's natural antiviral protein. He in turn sent a sample to a colleague at the Roche Institute of Molecular Biology, an institution wholly funded by Hoffman-La Roche.

Next, Genetech, a young biotechnology firm linked with Hoffman-La Roche, devised a way to make large quantities of Interferon genes from KC-1. Sensing a lucrative market, Hoffman-La Roche filed a patent application.

The University of California, accusing the drug firm of trying to profit from the open exchange of scientific information, did likewise. The dispute dragged on until an out-of-court settlement last year in which Hoffman-La Roche kept the patent but paid an undisclosed sum to the university.

Since the 1970s, the potential for such conflicts has been magnified by a dramatic increase in the interpenetration of commercial and university research. In the United States in particular, traditional fee-for-service consulting arrangements made by individual scientists have been supplanted by new and more extensive kinds of arrangement.

Scientists in many of the most intellectually exciting disciplines, such as the life sciences, have more than just an intellectual stake in their work. They are increasingly likely to have a direct financial interest, not just consultants for, but also as shareholders in, aggressive new biotechnology companies striving to protect trade secrets from their competitors.

These burgeoning links with private enterprise are causing widespread concern. In some cases, the race to patent has become more compelling than the race to publish. As a result, many leading universities have started to impose firm rules to avoid conflicts of interest.

But a study published recently by the American Association for the Advancement of Science (AAAS) argues that the problems posed by biocommerce are just part of much wider changes in the control of the scientific enterprise, changes which have already upset traditional assumptions about intellectual autonomy but are not yet fully understood by scientists or by those who use the knowledge they produce.

According to William Carey, executive officer of the association, American research is no longer the simple trilateral alliance between academia, government and industry that it was in the immediate postwar decades. It has now evolved into a pyramid of partnerships ranging from traditional contracts between sponsors and individual academics to complex deals negotiated strenuously by whole institutions.

In the new circumstances, he adds, the research scientist increasingly encounters dilemmas of rights, regulations, multiple sponsorship, professional conscience, openness, and secrecy. As infrastructure expands, dilemmas multiply.

The association's study, directed by Cornell sociologist Dorothy Nelkin, traces these dilemmas to a variety of new and sometimes conflicting social developments:

- Concerned about lagging industrial development, the federal government is urging scientists to break down the organizational barriers that used to separate basic and applied research. Tax incentives, changes in patent law and a decline in federal funding have encouraged an increase in industrial sponsorship of university research. The new collaborative arrangements pose new questions about the ownership of research results.
- Worries about the health effects of toxic wastes, environmental carcinogens and chemicals in the workplace have increased the public appetite for early access to scientific findings. Research results are now commonly used in litigation and to settle political controversies. But often, the demand for early information undermines science's time-honoured but also time-consuming validation procedures such as peer review.
- Widescale public funding of scientific research has limited professional autonomy. Scientists who receive public funds must account for their use of the funds and comply with federal regulations on the ethics of their research methods and on the disclosure of results.
- Under the Reagan administration the government is making bolder claims for its right to control the dissemination of scientific findings in the interest of national security and even international trade.

Not all of these changes have gone unnoticed by university presidents. Major institutions which have signed collaborative agreements with private industry have, for the most part, conducted long and careful negotiations to ensure that commercial interests do not undermine the independence of university scientists and their right to choose and publish their own research.

Sometimes, however, the sheer scale of the agreements appears to confound attempts to retain the traditional ethos of the universities.

In 1980, for example, Harvard's Massachusetts General Hospital accepted a 10-year grant of $50m from the German pharmaceutical firm Biogen to set up a brand new department of genetic engineering. Stanford and the University of California have formed a centre for biotechnology research with funds from six chemical, engineering and biotechnology companies, and similar arrangements have been made for microelectronics by Stanford and the Massachusetts Institute of Technology.

In such cases, Professor Nelkin argues, even the most carefully structured arrangements can raise sensitive proprietary issues. For one thing the new arrangements make it possible for private firms to invest late in the day, reaping the benefits of years of prior research funded by the government. Thus the public pays twice – once through taxes that support research and again for privately-marketed products based on the same work.

Nelkin also doubts whether individual academics can really avoid conflicts of interest when researchers with a financial state in their own work regard many of their findings as trade secrets. Secrecy, in turn, weakens the system of peer review and hampers the replication of scientific findings.

She warns that unstable federal support is forcing academic scientists into industrial liaisons that may change their traditional role as a source of relatively unbiased information.

"Industrial connections blur the distinctions between corporations and the university, establishing private control over a public resource. Problems of secrecy and proprietary rights are inherent in these new relationships and hold serious implications for both academic science and the public interest," she said.

But it is not only in relationships with private firms that scientists are facing new and perplexing issues. Traditional assumptions about the right of researchers to safeguard their own data – and decide when to release their findings – are also facing new challenges. In 1976, for example, a group of doctors filed a request under the Freedom of Information Act (FOIA) for data gathered during a long-term study of treatment received by 1,000 diabetes patients.

The issue arose after university researchers conducting the study suggested that a drug used commonly in the treatment of diabetics was dangerous. Their results contributed to a decision by the Food and Drug Administration (FDA) to withdraw the drug from the market. Complaining that a useful therapeutic tool had been withdrawn on slender grounds, the doctors demanded access to the original research data. Their request was turned down by a Federal appeal court.

Courts also blocked an attempt by the Dow Chemical Company several years ago to force the University of Wisconsin to divulge data from a study of the toxic effects of dioxin. Dow, deeply involved in debate over the safety of the herbicide Agent Orange, said the public had a right to scrutinize the federally funded study. A district court, citing the principle of scientific autonomy, said it was for the university to decide when the results were ready for disclosure.

But the AAAS study warns that such decisions have not prevented an enormous increase in public demands for access to research data. FOIA requests to the National Institute of Health increased from 300 in 1975 to 1,638 in 1979.

Even more acute conflicts over the ownership of scientific data have surfaced when scientists have felt compelled, in the public interest, to divulge information their employers want to keep secret.

In 1980, Morris Baslow, a research biologist employed by a private consulting firm, disputed a report the firm had given one of its customers, a nuclear utility, minimizing the impact of proposed power plant on local marine life. The firm had omitted the part of his findings which indicated that effluent would have a considerable adverse effect.

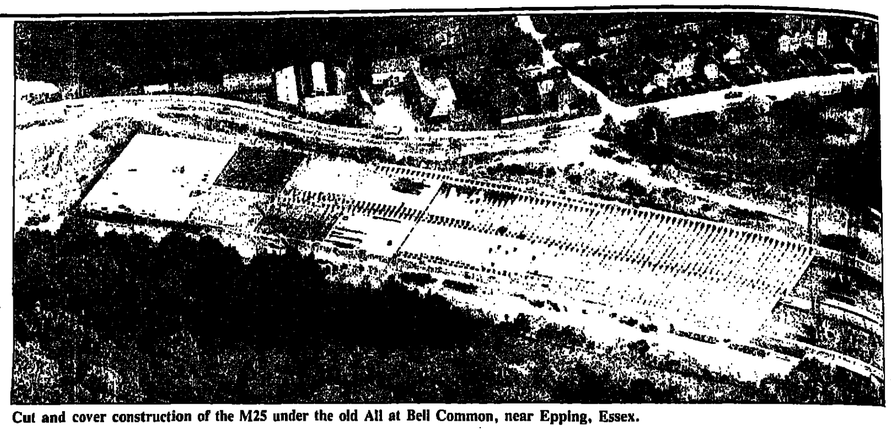
Baslow asked the firm for permission to present his findings. At a public hearing on the power plant in question. When his employers refused, he wrote directly to the Environmental Protection Agency (EPA) detailing his concerns. He was immediately dismissed, and sued by his employers for damages and for the return of the research data he had taken with him.

Although the case was settled out of court, similar instances of "whistle-blowing" have become common enough for several states to have passed laws to protect employees facing retaliation for disclosing proprietary information in the public interest.

How have scientists responded to these diverse challenges to their sovereignty? Not as consistently as Nelkin would like. She complains that scientists expect too often to have things both ways. Thus they claim that security-related control on sensitive research chill their creativity, but continue to seek defence department funding.

For better, she says, to adopt a consistent stand against any secrecy in science.

Britain's outer cities face an apparently bright future. John Herington argues that their relative prosperity is increasing environmental, social and political conflict



Cut and cover construction of the M25 under the old A11 at Bell Common, near Epping, Essex.

The price of urban recovery

The paradox is that at a time of national economic recession the commuting zones around our large cities now include some of the most dynamic growth settlements in Britain. The 1981 Census of Population reveals the fastest rates of demographic change are found in the new and expanded towns. New forms of high technology industry are found in "science" or "business parks" close to the national motorway network. Warehousing, out-of-town shopping centres and other types of commercial and industrial development jostle for cheap land and accessible locations. Smaller country towns and villages feel the benefit of the so-called "urban-rural" shift in employment.

In a perverse way, recession encourages the expansion of the outer areas because these are the very places which attract those sectors of the economy which are growing, notably the tertiary and quaternary industries. If national recovery takes place it is more likely to be in Northamptonshire rather than the London Borough of Newham.

Ironically, the current Government's rate-capping bill has upset Conservative as well as Labour strongholds and pushed the problems of urban growth and recovery in the outer cities into the political agenda. What lies behind the concerns of shire counties like Essex and Buckinghamshire is not simply the immediate problem of how to raise revenue to meet the targets being imposed by central government but the increasing public costs of physical and social infrastructure necessary to support a youthful and growing population in the outer metropolitan regions. The issue at stake is as much national policy for the redistribution of population and employment as the question of central-local government relations or local government finance.

National planning policy has long sought to encourage the growth of people and jobs in the outer areas of British cities. Throughout the 1950s and 1960s and indeed up to 1977 when the Government published the Inner Areas Act, public policy was directed towards planned decentralization in new and expanded towns (following legislation passed in 1946 and 1952). Despite changing economic and demographic conditions, planned decentralization has had an enduring impact on the geographical spread of urban development and created opportunities for social and economic prosperity in the outer cities which have been denied to the inner cities.

Although the policy of planned dispersal is now officially ended in favour of a more explicit recognition of inner urban problems, other changes in Government philosophy are having an important impact on the growth momentum in outer areas. The public planning system has been the subject of close scrutiny and led to new forms of planning practice. The Government's purpose has been to shift the emphasis away from the protection of the environment (implied under urban containment) to facilitating economic development. Some commentators claim that containment is no longer an adequate response to national economic requirements. If planners limit the "natural" growth of those areas favoured by new technology any chance of prosperity will simply wither away. Hence district councils are urged to grant planning permission for employment-generating development and make land available for housing. Hence the Department of the Environment intervenes to modify upwards the structure plan targets for future housing development in counties such as Berkshire (+8,000 houses) and Surrey (+12,000 houses).

Changes in the national economy and shifts in the attitude of central government in favour of development combine to present new and hitherto unanticipated social problems. The most worrying feature about recent developments in the outer city is that the public planning system has become a less secure framework for managing urban change. Of course too much control may wreck the chances for economic recovery but too little could lead to the very environmental problems which prompted the town and country planning system in the first place.

Potentially the most serious consequence of urban dispersal has been the concentration of disadvantaged groups in the inner cities. Out-migration has favoured the younger, skilled and better-off leaving the unskilled urban poor behind. A growing geographical separation between social classes and racial groups brings social and political tensions. Moreover, the Government's apparent encouragement to private investment in the outer cities will require increasing capital expenditure on infrastructure (transport, water and sewerage for example) which will have the effect of redistributing wealth in favour of the more prosperous exurbanites.

The catalogue of urban ills associated with the inner cities might lead us wrongly to assume that the social problems of the outer cities were negligible. The official end of planned overspill programmes has not diminished the occasion for large scale urban growth (as the expansion of Swindon or parts of north west Hampshire testifies). The only difference is that private rather than public investment determines the scale of growth which occurs. The direct and indirect social costs of growth must be met by the local authorities in the areas affected: new schools, clinics and day nurseries for the 5 to 15 age group are required. Moreover, dispersal of population into smaller towns and villages may make education and health provision costly to provide and difficult to coordinate with the spatial pattern of private housing development.

The social cost of outer area development is not the only consideration. The out-migration of a relatively prosperous middle-class has effectively ousted local residents from the housing market. There are real difficulties for lower income groups who must compete with other commuters who can afford higher priced dwellings in the outer city. The diminishing supply of private and public rented housing stock exacerbates the problem for the less well-off. Additionally, the discrepancy between average incomes and average houses prices in some commuting area makes it probable that many households will face difficulties in becoming owner occupiers, a point which this Government should take note of.

The housing issue is not expressed in the same way by the volume housebuilders. Their arguments turn on the amount of land released for housing in structure and local plans which they say is insufficient to meet marketing criteria. The Government appears to agree and has issued a succession of circulars urging authorities to grant permission for residential development, the latest of which, *Land for Housing*, gave virtual carte blanche to the developers.

The present Government's desire for economic recovery virtually wherever it can be encouraged, combined with its more relaxed policy stance on urban industrial development, undoubtedly adds a fresh dimension to the land resource issue. Certainly much needed economic development requires the taking of farmland. Some planners argue that farmland loss has been exaggerated; others advocate a more cautious approach to land release. What seems less in dispute is that a relatively high proportion of new building takes place on greenfield sites outside urban areas and that an increasing number of planning applications affect farmland which is not strictly allocated for development.

The political balance between protection of the countryside and the provision of land for future industrial development – whether for housing, commerce or warehousing – has invariably fallen down during the post-war era on the side of preservation. What is new about the present time is the political tension between local and central government which surrounds so many growth plans for the outer cities. The environmental lobby of landowning and conservation interest groups have always tended to oppose urban development, but their voice takes on a different significance today in the context of the pressing needs of the inner cities.

Political tension between central and local government must grow unless the former shows a greater willingness to face up to the consequences of dispersed urban growth in Britain. Despite their insistence that local councils should implement national economic strategy by making economic and employment-generating developments take priority, ministers have backed away from the national and regional land use planning and resource implications.

The pressures for urban dispersal are strong and seem difficult to control given the current macroeconomic and political climate. Yet is the physical urbanization of the outer cities a *sine qua non* of economic recovery? Although some high technology and service industry could be encouraged to expand as a result of a more permissive approach to land release on the part of the local authorities, there is no guarantee that either higher output or more employment would result. Indeed, the science parks and superstores being built today are unlikely to have more than a marginal impact on the rate of economic change. Moreover, there are other economic activities which might serve the nation and the outer cities more efficiently and prove socially more acceptable to exurban communities: for example the expansion of tourism and agriculture.

Nor should we ignore the long term social consequences which might arise from a "post-industrial" development of the outer cities: the erosion of cherished landscapes and farmland, increasing social polarization between the communities of the outer and inner cities, and steeply rising infrastructure costs. Possibly the greatest threat arises from the mismanagement of private housing land decisions: Housing rather than other forms of industry accounts for the greatest loss of productive farmland. Over-emphasis on speculative housing provision has exacerbated social polarization. The population growth resulting from new house building puts pressure on social services, raises public expenditure and may swamp local communities.

All these issues might be resolved over the long term, economic recovery might permit greater social spending in such fields as public development planning and low-cost housing, thus making it possible for Government to manage outer city growth; land for housebuilding might be released more selectively; a more equitable mix of house types and tenures could help break down polarization; the social costs of community development could be reduced and spread over a longer time period. A slowdown in the rate of urban change could minimize political tension. For all this to happen would require a more clearly defined national consensus in favour of conservation and city living.

It would help if the relationship between the Government's regional industrial policy and its avowed commitment to urban regeneration could be spelt out more clearly. The White Paper *Regional Industrial Development* (Cmnd 9111) published in December 1983 baldly states that the government's economic objectives for rural areas are essentially complementary to regional industrial policy and urban areas. It is difficult to imagine a more complacent or confusing statement. Only if by rural we meant "remote rural" could this possibly be true. Sadly there is no outer area dimension in Government thinking which embraces the explosive growth areas within which the bulk of the population of this island lives. The dimension is needed to handle the battles between economic recovery and the environment which must surely grow more intense in the late 1980s.

The author is a lecturer in geography and planning at Loughborough University. His book The Outer City *is to be published by Harper and Row next month, £5.95 in paperback.*

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Alan Wilson on the benefits and difficulties of philosophy

Adding a degree of subtlety

Martin Walker's articles in *The Guardian* have given new prominence to the issue of what philosophy should be about and how it should relate to other disciplines. My own interest is engaged partly because an amateur's involvement (as a user) spans the 25 year time period he describes; and partly because I retain my belief that philosophy should be a significant part of multidisciplinary teaching (and, indeed, should be available as one of the foundations for students in most disciplines).

I want to argue that the main role of philosophy for students of other disciplines is to add a necessary subtlety to their thinking and that recent contributions are a substantial help. I also argue that a new dimension becomes available to research and scholarship in many disciplines. There is a major problem, however, in making the appropriate concepts and modes of thought available to non-philosophers with relatively little time available. And there is a consequent danger: the ideas are treated simplistically and the concepts become used only as labels either to claim respectability for an argument or as mud to be slung. The idea of "necessary subtlety" applies to philosophical concepts themselves as well as to their use within disciplines. I will argue that some key ideas can in principle be made available and that it is then possible both to begin to use labels (or to avoid using them) more effectively, but more importantly to be able to think more deeply in the context of a particular discipline.

My own education was on the margins of Cambridge philosophy – the Moral Sciences Club and some additional lecture courses in the late 1950s. The influence of Russell was still strong, certainly in my own reading. I was happy to accept the canons of logical positivism to avoid becoming the prey of the evangelical movements of the day. Dons such as R. B. Braithwaite were concerned with the nature of theoretical concepts and the idea of "depth of explanation" in a way which seemed to allow Cambridge positivism to escape from some of the trivialities of the Oxford version. There seemed to be no problem in retaining an interest in questions of "values" – as in politics for instance: there was no need to cast them into the bin of metaphysics. They could be rescued by focusing on the notion of "experience" in a broad sense and being able, ultimately, to relate language to it; rather than believing only in the reality of something more simple-minded like "fact" or "observation". I was able to work out a *modus operandi* for my own thinking which lasted a good number of years and saw me through a transition from the natural to the social sciences.

The comforts of these foundations were shaken when I found myself being attacked in the literature as a positivist and functionalist, and that these were obviously intended as terms of abuse. The meaning of "positivism" seemed to have changed and I needed to find out what a functionalist was. Thus began a lot of (unsystematic) reading which ultimately led to a revised personal position. What follows is a digest of one person's response to the new philosophy and an implicit argument that this represents a way into some of the new ideas; perhaps with emphases which are not all conventional. Some of it, however, will be simple to the initiated and their patience is requested.

We can begin conventionally by asserting that philosophy is concerned with what exists (ontology) and how to acquire "knowledge" about what exists (epistemology). On the former, I am still prepared to be a naive realist – thus avoiding the sort of issue which infuriates non-philosophy students about whether *that* table really exists – and transfer any problems into the category of problems about knowledge. A naive epistemological position would involve the unproblematic acceptance of sense data describable in some language, the "observation-language", with higher-level concepts relatable to lower-level concepts by logical deduction. Truth is established by comparing logically-deduced predictions with observation. This position is more easily tenable for science. Social science raises issues of value; of participant "observers"; and the possibility of laws being shaped by the power of a few individuals. The arts has all this coupled with an exploration of possible as well as actual worlds. It is comforting to see the one forced into the character of natural science and the other an adventure in imagination not connected to the idea of knowledge; but this is soon seen to be unsatisfactory.

Some key concepts of modern philosophy begin to shed light on these difficulties. I want to start with four ideas. First, knowledge is a social product; secondly and consequently, language is made up of elements whose meaning has evolved socially; thirdly, meaning is established as a consequence of communication between people (inter-subjectivity); and, fourthly, truth is not something absolute but simply the result of agreement – a consensus.

The first point can be illustrated by the ways in which knowledge is presented in particular disciplines, especially those which can be regarded as coherent schools: there is an orderly system with no room for alternative representations and perspectives which may offer different insights for different purposes. The focus on language and meaning is the most crucial of all, since this where habits of tolerance, subtlety and the ability to search for understanding are established. Modern semiotics, building on the philosophy of C. S. Peirce, shows that the meaning of a sign – an element of language – is defined in relation to other signs. There is a sense, therefore, in which all our language, all our *thinking*, is metaphorical. The circularity can be broken from time to time by ostensive definition: "*That* is a red bus". The evolution of meaning, and our understanding of it, is closely related to the idea of intersubjective communication. We each have our individual understanding of any concept, but the complex of interdependent definitions and our continual performance in a public arena, keep definitions within bounds and this allows us, for much of the time at least roughly, to understand each other. This understanding often breaks down, however, between disciplines or even sub-disciplines. The fact that we are all part of this social process should encourage tolerance when we don't understand, or when we feel that the use of a term is different to our own. It should encourage the search for new words which clarify the differences and facilitate the development of an understanding of what, mutually, needs to be said.

The fourth point – truth as consensus – is surprising at first. But it is quickly seen to be helpful. For example, natural science can almost be defined as that part of knowledge about which (usually) consensus can readily be reached. The meanings of the terms of scientific theories evolve like anything else, but they can more easily be related to experience in the form of experiments or observation. But this evolutionary process may take quite a long time, and what this argument does begin to do is establish scientific knowledge as the same kind as any other sort of knowledge (which is the opposite emphasis to the logical positivist viewpoint). It is not ultimately privileged. The other side of the coin is that knowledge about the more interesting aspects of life and society will not be so easily the subject of consensus and in many cases agreement will not be achievable.

Disagreement will often be a matter of ideology, and this is a fifth valuable concept to add from the contemporary armoury. Ideology can be taken as a set of beliefs relating to less-than-universally held values which underpin a position and which are usually unconscious and implicit. The products of science can usually escape its realm – though not the judgements which scientists make about what constitutes the most interesting and important problems; nor the use of the results of science in technology. Much social science and much art is often unconsciously ideological and an important objective of critical theory is to be able to draw this content into the open, to strip it away from what lies underneath. It is at this point that questions of value have to be explored and interpreted. Philosophy should have much to offer through the sub-discipline of ethics and indeed interesting ideas build on the work of people like John Rawls and Robert Nozick.

My argument turns on five ideas or concepts which at first sight seem odd in relation to the usual debates. Where do I stand on the positivism vs phenomenology vs structuralism arguments, for example? The debates arise in this form because philosophers, amateur or professional, behave like practitioners of many other disciplines and group themselves into schools. So, to be "positivist" is a bad thing, to be "structuralist", currently, a good one. The debate, organized by the structuralists (because debates are always organized by the newcomers, the invaders) is then conducted in terms of a caricature of positivism (which is thus "value-free" works on the assumption that the only route to knowledge is that of the natural scientists, and so on).

I want to argue two things about this kind of debate: first, that different positions can be distinguished more fruitfully starting from the five ideas sketched above; and secondly that this allows us to retain the benefits of (for example) positivist thought while shifting positions to absorb the valuable insights of the new schools. A corollary of this procedure is that useful understanding of the shifts of the meaning of terms like positivist, over time, can be articulated and understood. If the analysis implied by this argument is carried through, then the different positions are distinguished by what is being said about their objects of study – but it may be necessary to work very hard to get these into focus for mutually-understood comparison.

At this stage of the argument, it is useful to add a sixth element to the list of ideas which provide an overall framework. It is recovered from my 1950s education and can be labelled "depth of explanation". The main clarity can be broken from time to time by ostensive definition: "*That* is a red bus". The evolution of meaning, and our understanding of it, is closely related to the idea of intersubjective communication. We each have our individual understanding of any concept, but the complex of interdependent definitions and our continual performance in a public arena, keep definitions within bounds and this allows us, for much of the time at least roughly, to understand each other. This understanding often breaks down, however, between disciplines or even sub-disciplines. The fact that we are all part of this social process should encourage tolerance when we don't understand, or when we feel that the use of a term is different to our own. It should encourage the search for new words which clarify the differences and facilitate the development of an understanding of what, mutually, needs to be said.

The fourth point – truth as consensus – is surprising at first. But it is quickly seen to be helpful. For example, natural science can almost be defined as that part of knowledge about which (usually) consensus can readily be reached. The meanings of the terms of scientific theories evolve like anything else, but they can more easily be related to experience in the form of experiments or observation. But this evolutionary process may take quite a long time, and what this argument does begin to do is establish scientific knowledge as the same kind as any other sort of knowledge (which is the opposite emphasis to the logical positivist viewpoint). It is not ultimately privileged. The other side of the coin is that knowledge about the more interesting aspects of life and society will not be so easily the subject of consensus and in many cases agreement will not be achievable.

Disagreement will often be a matter of ideology, and this is a fifth valuable concept to add from the contemporary armoury. Ideology can be taken as a set of beliefs relating to less-than-universally held values which underpin a position and which are usually unconscious and implicit. The products of science can usually escape its realm – though not the judgements which scientists make about what constitutes the most interesting and important problems; nor the use of the results of science in technology. Much social science and much art is often unconsciously ideological and an important objective of critical theory is to be able to draw this content into the open, to strip it away from what lies underneath. It is at this point that questions of value have to be explored and interpreted. Philosophy should have much to offer through the sub-discipline of ethics and indeed interesting ideas build on the work of people like John Rawls and Robert Nozick.

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I want to argue two things about this kind of debate: first, that different positions can be distinguished more fruitfully starting from the five ideas sketched above; and secondly that this allows us to retain the benefits of (for example) positivist thought while shifting positions to absorb the valuable insights of the new schools. A corollary of this procedure is that useful understanding of the shifts of the meaning of terms like positivist, over time, can be articulated and understood. If the analysis implied by this argument is carried through, then the different positions are distinguished by what is being said about their objects of study – but it may be necessary to work very hard to get these into focus for mutually-understood comparison.

At this stage of the argument, it is useful to add a sixth element to the list of ideas which provide an overall framework. It is recovered from my 1950s education and can be labelled "depth of explanation". The main practical differences between what is taken now as positivism, functionalism and structuralism, for example, may not be fundamental differences of philosophical position but simply different attempts at depth. In social science, the simple-minded positivist may be rooted in observation and naive about ideology and so restrained to sometimes questionable elementary description. The functionalist takes a set of institutions as given, not to be "explained", and explores their roles and relationships. The structuralist can ask deeper questions about the forces which create the institutions in that form and, if this depth of understanding can be achieved, can demonstrate the circumstances in which there will be transformations to a new form. The structuralists, therefore, make us ask deeper questions; but I still feel I can retain some of the advantages of positivist thinking (for example, ultimately being able to relate meaning to experience) and a preliminary functionalist analysis may be worthwhile.

The argument has two substantial consequences. First, some training (for students and teachers) in the use of the concepts of modern philosophy, particularly in relation to examples from a variety of disciplines, would be valuable. Secondly, a critical scrutiny of academic writing as a major part of scholarship would often be more productive in the generation of both understanding and new ideas than the current organization of research within narrowly-defined "schools". The two are closely linked: more activity in the second area would provide the material for teaching in the first.

Two disciplines provide models for ways in which progress could be made. Mathematics is a methodological discipline, like philosophy, but has continually kept itself in the mainstream by a tradition of applied work. Secondly, consider literary criticism. The objects of study are literary texts. Understanding is achieved by layer upon layer of critical writing about texts, each building on earlier scholarship. It would be fruitful to apply these methods – the application and development of critical insight – to the texts of any discipline. We should seek to develop fields of scholarship like "geographical criticism" or "economic criticism". The concepts of contemporary philosophy provide the basis for this kind of work.

The auhor is professor of urban and regional geography at the University of Leeds.

Bernard Crick

Reflections on memory, myth and history

I remember my uncle lifting me on his shoulders and hopping upstairs on one leg while women, I've no idea who, cried out, some in pretended shock and some in real alarm, "Oh Bernard, don't do it". "Put him down!" "It's too much for you." "You'll do yourself an injury!" It must have been the old soldier's party trick. And I can remember both the dark blue office suit, supervisor of the night shift at the telephone exchange, and its incongruous companion, a grey cloth cap, secretary of the Kingston Amateur Football Club; also the hideously conspicuous bright blue serge that the soldiers war in Rochampton. He went back there often for them to probe and dig once again for the splintered shrapnel in the groin.

He would swing along powerfully on his crutches, cheerful to see his sister, sweets or a toy for me, but often wincing with pain. The shoulders so broad, no longer the photograph of the slim young sergeant who had run away from Sunday school in 1899 to join the King's Royal Rifles, a crack Light Infantry regiment, voracious for disciplined, bible-reading recruits since the last enemy, whereever the Great Game was played, was the bottle far more than bullets of Afghan or Boer. So uncle carried the colours to the King Emperor at the Imperial Durbar of 1911 and sent a memento home, an ivory frog, the size of an halfpenny, which years later I begged from my mother's trinket box and had set as a ring.

He returned after serving his 12 years with the colours and became his colonel's confidential secretary. Floss says that Colonel Benyon died in bed with Mrs Lily Langtry, but that's surely a stock name, could have been any "demi-rep", a Sarah, a Kate, a Maude, or a Rose rather than "Jersey Lil" (who had once held the Royal Warrant, "By Appointment Supplier of **** to HRH the Prince of Wales). And the doctor said to my uncle, "You're an old soldier, you know a dead 'un from a live 'un. The medical register, I'd struck off it if I gave a false death certificate, but if you can get him home quietly, I'll sign that he died at home. Uncle got him to Cadogan Square – thus rendering himself redundant.

In 1914 the widow discovered all and sent for uncle. "Never did an employer have a more loyal servant. No, I must say, never did friend have a truer friend; you have prevented scandal and saved my honour. What can I do for you? A pension? A cottage? Lady Esher needs a man like you." "Madame, the colours are recalled, at this very moment the regiment is mustering for Belgium in Kingston Barracks. But the reserves won't go out for a week or two yet; it could be all over before I get out there. Could you put in a word with . . .?" "I will call on my friend Lady Kitchener tomorrow." She did. He went. Within a week, during the stubborn retreat through Flanders, standing beside Lord Maurice Battenberg, so mother says, organizing the rapid volley-fire of the Light Infantry, the same shell crashed its shrapnel into them both; and they had to cut off his leg without analgesia. My mother and her mother visited him at Balliol College. "The Warden was most kind, offered us a cup of tea, said how proud he was that the college was a hospital!"

The full tale came out in bits and pieces over the years. As a very little boy, I'd sit endlessly in a Thames skiff which piled as a ferry between Twickenham and Ham, while my mother took tea with her cousin, Else, who ran the Lest We Forget, the Primrose League, the Twickenham Ladies Conservative and Unionist Association and organized the local Armistice Day poppy sales, and had them all hopelessly muddled as one comprehensive, necrophiliac cult of the dead of the First World War. I long thought that churches were parts of war memorials and that Christ had died among the poppy fields of Paschendale. Indeed mother's cousin Else refused to accept the Second World War. When her husband, George, always home promptly and accounted for, the General Manager of Mear's the riverboat people, phoned her one day in excitement, "I won't be home dear, the Admiralty have ordered us to Dunkirk", she said: "Don't be silly George, don't you know there is a war on? You'll get no trippers in times like these." George took the helm until the skipper, his day off, was found by the Kingston police in *The Swan*, sobered up and lowered over Putney Bridge. George got his MBE.

Only in my teens did I learn that uncle had been drowned, right there, while swimming by Eel Pie Island in 1936. Twenty years later my mother and I had been shopping, collecting some keys from a locksmith in the market. "Crick, that's an unusual name. Are you Harry Crick's son, Kingston's bad-tempered right-half, 1919–1928?" Such is fame. My reply was cool. We then boarded that most rare, red and solitary of suburban buses, an 85, taking its time before climbing Kingston Hill as through a misty Saturday afternoon twilight. A side street disgorged a crowd running with a red-faced, elderly dog-collared man out in front. He leapt on. The conductor rang the bell, the driver accelerated, stranding the intoxicated football crowd: "Quick", said mother, "move up the bus, Bernard, That's the Reverend Wellesley Ore, Rural Dean of Kingston, your uncle's good friend. He was chairman of the club and your uncle secretary. I don't want to meet him, brings back painful old memories. He's the one went to the inquest to see that the Coroner would bring in a proper verdict. 'Drowned by misadventure while swimming'. He swore on the bible that Charles Cook swam everyday and all through winter at Eel Pie Island. He saw that the right verdict was brought in so that he was buried in church with military honours.

The full truth came out, and the gift of the frog, only after I had taken Floss, like all my lady friends, to see "Oh! What a Lovely War" at Wyndham's in 1963. A "Sister Pogetwell at Roehampton", again I suspect the name, had begun walking out with him and become engaged, "for the sake of his pension", his sister jealously said, "And to break it off, she told him right out, what we all knew but had kept hidden from him, that he had a heart condition." "Oh Brond, don't do it". For then he did go swimming, folding up his clothes neatly as if for kit inspection; and he left a note that the Coroner and the Rural Dean, old patriots, tore up. Perhaps one day with the skills I've learnt as a scholar I'll have time to search the sources, records and papers to try to establish how true are my mother's memories. Perhaps next summer.

Two teachers relate their experiences of helping pupils find their way through the applications jungle. James Halfyard left and Martin Stephen below

School's eye view of the UCCA lottery

One feature not reduced by the cuts is the complexity of higher education applications.

The three main and several minor fields of application pose problems first of selection and then of decision which tax most experienced sixth-form teachers, let alone the 17-year-old students they seek to advise. It is to be assumed, therefore, that any attempt to simplify part of the system should be welcomed. Nevertheless, my experience with the Universities' Central Council on Admissions and the Central Register and Clearing House since 1970 leads me to be rather concerned that problems arising from the procedures of those organizations may be repeated in the proposed Polytechnic Central Council on Admissions.

The least helpful element in the UCCA procedure is the assumption that the five courses listed in Section 3 are in order of choice unless brackets indicate otherwise. This is, I believe, an unnecessary and (for the candidate) potentially harmful complication. In the event, few candidates can know their first choice until they have visited a university and had some opportunity to inspect it. This would be less serious if it were not evident that, whatever their public statements, a significant number of university departments pay close attention to their position on a candidate's list of choices.

Consequently, some very surprising decisions are made especially in the case of very good candidates whose lists are headed by prestigious institutions. The standard reply to tactful inquiries about this is "We had so many good candidates . . ." but this rings false when the highflyer who placed the institution on line four is rejected, the average candidate who placed it first is made a conditional offer, both decisions being taken without benefit of prior interview.

Of my current crop of UCCA candidates, only one quarter have accepted or probably will accept firmly their original first choice university. Interviews and visits have caused the remainder to prefer another.

That one may bracket all choices equally is true, but it is very unclear how this affects the candidate's prospects. The coy attitude of many university departments to this question is disappointing. I would hope that PCCA (and UCCA as soon as possible) would eliminate the element of preferred order from the form entirely and instruct candidates to place institutions in order of polytechnic or university code number.

The CRCH uses an order of preference in a different, and to my mind even more harmful way. The experience of a BEd candidate this year is, fortunately, not typical but seemed to cause no concern to the institution concerned. Her application went off to college of first choice in mid-October. After some telephone calls had failed to elicit information, I was told at the end of January that she would be called to interview in mid-February. I was also told that there had been illness in the department which had "caused some delay".

With her application lying fallow for three and a half months her chances of finding vacancies if referred to the colleges lower in her list were negligible. Failure to send applications simultaneously to all colleges listed has wrought chaos with her application and caused deep and entirely avoidable tension and distress.

The question of delay is most vexed. One highly subscribed law degree course deliberately delays all interviews and decisions until February to be clear of the "Oxbridge" processes which affect 75 per cent of its candidates, one of whom, this year, comes from my school. At the time of writing she is still waiting to hear from this and from one other university. Her UCCA form was despatched on October 5. She is also a classic victim of the "choice order" problem, being estimated at AAA and holding a single offer! Several other candidates have had no word whatsoever from one of their five choices. In each case telephone calls elicit the information "We are still considering him/her". Like many of my colleagues in other schools I aim to have UCCA forms off by mid-October. I cannot regard a delay of four months as either necessary or reasonable.

I labour this point in particular because the polytechnics are uniformly excellent in the speed with which they make their decisions. The usual polytechnic reply time is about three weeks and hardly ever does one wait more than six. Perhaps the biggest source of anxiety associated with a scheme like UCCA is the period either side of Christmas when those who have not heard from university are left to contemplate those who have received five offers (several in my school this year). The lucky ones are limited neither to particular subjects nor to the group of high performers estimated at 14 or 15 points.

In the year they apply for degree course places and take A levels, sixth-formers are placed under pressures which for some verge on the insupportable. I am forced to suppose that some of these are unavoidable but I an very sensitive to and offended by those which can be avoided and which make my sixth-formers' lives more troubled than they need be.

It must be apparent that much of my criticism of the UCCA system is directed not so much towards the staff at Cheltenham (who are invariably helpful, courteous and constructive when I need to contact them), but towards some individual university departments who may (to some extent), shelter behind "the system" as an excuse for procedures which are less than efficient or considerate.

All applications involve, of course, forms. I gather that PCCA will need to use a more concise document than the present polytechnic application form. I hope very much that any new form will allow more space in what is, in the UCCA form, section 5, the candidate's own information about him/herself. I have spent hours editing the 200 odd words of information which good candidates wished to include about themselves and which the space available in section 5 precluded. I hope that the sensible space in the existing polytechnic form will be retained but perhaps lines might be provided.

I suppose that the really frightening task facing the polytechnics is the scramble in September to fill places as those candidates who are unplaced in UCCA and who did not make suitable application earlier send off large numbers of forms. I can see how a clearing system will ease this but I doubt that the fundamental problem facing the polytechnics at this stage, that of thousands of late forms to be processed somehow by about October 1, can ever be solved except by a unification of all degree applications in a single system. This does not seem an impossibility in theory but I suspect that in practice it would prove as difficult to achieve as most other ecumenical projects. I cannot anticipate that such a monolith would be less prone to the features I have already criticized in UCCA and CRCH.

I do not necessarily oppose PCCA. It would save time and postage. I would, however, say that my experiences with individual polytechnics have been uniformly happy in recent years and I hope that any PCCA system will retain the qualities which I associate with polytechnic admissions procedures. These are: an understanding of the candidate's position vis-a-vis the choice between university and polytechnic; flexibility in the matter of not-quite-firm acceptance by the candidate; swift and sensible decisions when the heat is on in late August and September; a willingness to believe the referee; rapid replies to applications and correspondence. In all these respects the polytechnics score over UCCA and CRCH.

If these qualities could not be retained in a PCCA system, I would, on behalf of my candidates, plead to be allowed to spend the extra postage, take the extra time, fill in the extra forms and keep a more advantageous arrangement.

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Pedestrian exam fails front runners

The decision by Emmanuel College, Cambridge, to base all its future entries on A level grades can hardly have come as a surprise to addicts of Oxbridge watching; perhaps partly as a result of this, the reaction to the decision was, if not totally warm, at least not actively hostile. Despite this, it is possible to see the decision as a decision by a major force in education to replace one faulty examination with another, and claim this as an advance.

The arguments for and against a separate Oxbridge examination are well aired and known. The decision to rely on A levels alone, however, brings a new set of fighters into the ring. Whatever the provincial universities might say, the chance of a place at Oxford or Cambridge has for years been an irresistible lure to the very top percentile of ability in British schools. These pupils are, by their very nature, exceptional.

In mathematics and some of the science subjects, A levels seem at least reasonably capable of giving an accurate estimate of a top-flight candidate's ability. Most teachers of English will be aware that in that subject, and perhaps in one or two other arts subjects, A level can have a crucial blind spot. It is not enough to discredit the whole examination, because numbers are so small, and it does not apply evenly within the very small group of students who will go on to get first-class degrees at Oxbridge.

I was made aware of this blind spot when two successive pupils who gained awards at Oxford on the basis of the entrance examination, and then went on to achieve high academic distinction, both obtained meagre B2 grades in their A level English, when in the same years pupils with double or triple A grades failed miserably to qualify for a place.

The reason for the comparative failure at A level of the successful pupils was not hard to find; in an examination where there are many more C and D grades than As, the student with a genuinely original mind and a maturity one or two years ahead of his peers, was liable to overshoot in a rather pedestrian A level. Views which Oxford dons hailed as startlingly original became merely eccentric in the hands of an A level examiner; a desire to examine one testing and crucial point in detail was taken as proof that the candidate simply was not aware and had not learnt the more mundane elements to the question. Scorn poured over a rather trite and trivial question was seen as flippancy, and reference to a Critical Quarterly article published only a week before the examination appeared to be taken either as pseudo-intellectualism, or an attempt to bluff the examiner.

It would be unfair to attempt to discredit the A level system by facts such as these; English is a notoriously hard subject to examine. But whatever its manifold sins and wickednesses, the entrance examination for Oxford and Cambridge did have a magnificent knack of picking winners from the pack who had bolted from the A level starting gate. On its own, this is a minor point perhaps, and must be stored against the propensity of that same entrance examination to make the most appalling mistakes. However, it is not the only issue raised by the reliance on A levels.

A level is taught; much good work at university is learnt, the difference being that the student at university has to be much more self-disciplined and self-reliant. Every teacher knows that some students peak at A level, and simply do not have the backbone or stamina to continue to perform at the same high level when at university and removed from the supportive frame of school and teachers. A level does little to touch this problem, which is more properly one of personality than academic attainment; A level might give an accurate idea of the engine's cubic capacity, but it has never done very much to help decide if the candidate can keep his foot hard down on the accelerator.

The Oxbridge entrance examination did a little more in this sphere, though not much, by encouraging or even forcing the student to work on areas outside the A level syllabus where inevitably a proportion of the work would have been done on either his or her own. The entrance examination coupled with an interview after A level was much more capable of predicting what is surely the most important element in a candidate, whether or not he or she will produce the goods while actually at university.

Expressed in the simplest terms, the entrance examination was better at assessing potential than A level exams or will be. There may well be a lot of dirty bathwater here thrown away by Emmanuel, but there is also the occasional baby. If the pattern is followed by other colleges, A level will be elevated to a position they simply do not deserve and perhaps the one undeniably good feature of the entrance examination lost for ever. Emmanuel and other colleges can be accused of replacing one fallible examination with another.

A number of other rather dirty bits of linen come to light or are focused on by this decision. In comparison with interview techniques being used in some sectors of industry and the armed forces, the techniques adopted by some universities are positively primitive, and occasionally even downright ludicrous. Some colleges at both Oxford and Cambridge have gained very bad reputations for bad interviewing or assessing candidates at all, but simply making wholesale offers of three A grades at A level is certainly that a certain proportion will inevitably make grades. This can give a student a wholly misplaced idea of his potential, lead him up the garden path, and lead to his in effect wasting one of his five UCCA bids.

One final point is the situation familiar to every teacher who has been responsible for preparing a candidate for Oxbridge entry, where for reasons totally beyond the control of school or student the A level grades simply do not accurately reflect a candidate's ability. Divorce, illness, collapse of a family unit can and have wreaked havoc on A level grades, and the examining boards are notoriously inflexible in dealing with incidents of this nature. Pleas from schools to universities are often seen as special pleading, as coming from a school's sense of duty towards its pupils rather than its accurate assessment of the pupil's ability, or the occasional referee who seeks to excuse a bad performance from a bad candidate on compassionate grounds has not helped the credibility of this excuse.

None of this means that Emmanuel is necessarily wrong in what it is doing. Given that both examinations can produce nonsense, at least Emmanuel's decision to let teachers only one form of nonsense to deal with. It would be sad would be if the decision were welcomed as an advance; at best, it is a retreat to ground that if not sullied, at least well-worn. In that retreat, one or two good pieces of ground have been lost, and perhaps instead of bouncing around between different examination systems the masters of Oxford and Cambridge might be better applied to devising an entry system to all universities that made due allowances not for stating where a pupil was at a given time, but where he might be going in the future.

If devising such a system seems impossible, it is well to remember how impossible it would have seemed 20 years ago that a leading Cambridge College would have relied solely on A levels for its entry procedure. When a big portion of time and effort in past years has been devoted, as yet unsuccessful attempts to alter the present system of advanced examination (A levels, where are you now?), it is something strangely sad in the sight of a major college choosing those examinations as the answer to problems. Emmanuel and those like it will no doubt get a good clutch of entries by relying on A levels; as a teacher I worry about the ones they should have had, but are so much less likely to find.

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Presences

Carried over the threshold

Michael Schmidt explains how the writer C. H. Sisson changed his expectations as a reader and editor

C. H. Sisson: his work "was a slow imaginative earthquake".

Several friends stand at the threshold of my editorial career. There is the late Edgell Rickword, whose *Calendar of Modern Letters*, short-lived though it was in the 1920s, remains a model and a standard for any literary magazine. And Octavio Paz – his magazines *Plural* and *Vuelta* were the immediate models for my *PN Review*, .

Donald Davie's vision of intellectual responsibility not confined to the academy has weighed with me. Laura (Riding) Jackson stands rather inside the threshold (I came to her work in my early thirties): I am distressed at how she is maligned and hounded by those who will not rise to the challenge of her work.

There is also the brilliant clarifying figure (a little chilling, like the Lanarkshire he is gradually transforming into a neo-classical landscape) of Ian Hamilton Finlay. And George Steiner, who never spares me his criticism or stints his support. There is Michael Hamburger who placed his learning at my disposal from our first meeting in 1972.

All of them have claims on our attention; all have been marginalized, ignored ill-understood by those who define the academic and journalistic mainstream of contemporary culture.

The person who looms largest at the threshold – so large that he resembles the threshold itself – is C. H. Sisson. Seventy this year, he came into my ken a dozen years ago. I was 25. Carcanet Press was active, *Poetry Nation* (later to become *PN Review*) was planning its first issue. Sisson's submission of poems knocked Carcanet off the rather predictable course it had embarked on, changing my expectations as reader and editor.

I heard a little about Sisson from Robert Nye, who suggested he send me work. I received the parcel at the English department of the University of Manchester where I had recently begun teaching. The typescript bore the ungainly title *In the Trojan Ditch*. I could not make head or tail of the poems. There was a long, intricately stanzaic piece called "The Discarnation" that (at the time) I particularly disliked. There was a good deal of lust, satire, abjection, Christianity, a tone chastening and acerbic to an unnatural degree.

I checked the impulse to reject the work on the spot and wrote benusedly to the poet, asking to see his earlier books. He obliged with copies.

It was the title poem of the collection *Metamorphoses* that opened my ear to his rhythms and my eyes to the central analogies in his work: the confluence of the Christian and classical, "the resurrection of the body", and the savage denunciation of certain elements in his (and human) nature and in the contemporary world. From the poem "Metamorphoses", with its pictorial precision and its resourceful tetrameter couplets, I began reading back and forward in the *oeuvre* with increasing excitement.

Robert Nye is one of several readers of Sisson who records a similar experience to mine: a strong dislike which, at a certain point of familiarity with the work, turns to the rare joy one feels upon discovering for oneself, or being discovered, by major poetry. Sisson says his first reading of Pound effected one of those rare adjustments of ear and orientation which occur only once or twice in a lifetime.

For me, Sisson's work was a slow imaginative earthquake. My bias towards American poetry – Elizabeth Bishop, Randall Jarrell, Robert Lowell in particular – had until then almost entirely coloured my reading. I remained faithful to them, but here I had an English poet (just *how* English I was to find out) whose work was on a par with theirs, yet different in kind. It lacked their sense of deliberated occasion, "plot", complicity with the reader. It shared some qualities with poets like Edward Thomas and Keith Douglas and Larkin, for whom I had a strong enthusiasm: but also with Eliot and Pound. It was intellectually and spiritually ambitious, and it pursued its subjects without looking over its shoulder at the reader.

I published his poems in the magazine and 10 years ago published his first collected poems and selected translations under the title *In the Trojan Ditch*. A new *Collected* is published next month to mark his seventieth birthday.

It's hardly surprising that I passed from reading his poems to his prose – the novels *An Asiatic Romance* and *Christopher Homm*, the critical books and the essays. I edited his *Collected Essays* under the title *The Avoidance of Literature* and commissioned translations from him. I attended to his editorial suggestions. The Carcanet list includes Ford Madox Ford, Wyndham Lewis, Jean-Louis Baghio'o, Botho Strauss, Abdelhak Serhane, Christina Rossetti and half a dozen other authors thanks to his recommendation.

Why should his work have bitten so deeply into me? I am a "deracinated intellectual" – English isn't even my first language. Perhaps Sisson's rootedness and Englishness are attractive in part for this reason. Through him I've acquired a sense of place (even if it is not his place) and culture (though not his culture, either). He encouraged me to write about Mexico, certainly, and I have learned by transposition to apply his ideas to my experiences there and here.

Through his poetry rather than his criticism he has made it possible for me to hear the rhythms of Pound – not the pre-*Cantos* Pound for whom I had long had an affection, but the tough later Pound who generally the English find so rebarbative. He made MacDiarmid – even the long-winded MacDiarmid – just about readable to me, and he showed Rosenberg under my nose. He told me how I could learn French by reading Diderot and Bossuet (he was not so happy when I went on to Voltaire!).

As a wedding present he gave us Clarendon's *History*, and his essays led me to Hooker and Jeremy Taylor, Swift and aspects of Coleridge I'd never attended to before. Indirectly, he revived my moribund Anglicanism.

My debts to him are so diverse that I have only hinted at them here. Those tempered essay-advocacies of his truce writers to their origins, give context and stimulus to the reader, never prefer the "summary" which makes it possible to avoid direct engagement with his subjects: when he writes on Vaughan, you get down your Vaughan and read again. Or Marvell, or Barnes. The prose he writes is aphoristic but not in any way reductive.

What makes him a particularly potent tonic is his insistence that books exist in a common world, and what matters is the quality of mind of a writer, regardless of personality. He has no faction, coteric or fashion: he has readers. He keeps his distance from the academic world. "The avoidance of literature," he says, is necessary to anyone who wants to tell the truth.

His generation is a remarkable one, clouded though it is by neglect. It includes George Barker, John Heath-Stubbs, W. S. Graham, David Wright and others. Sisson emerged late, largely I suppose because his work as a civil servant and his natural scepticism delayed him.

In 1984, the writers of his generation look quite tall in comparison with the two – or is it three – generations which have succeeded them. At least, they do to me. And – again, to me – Sisson in his unassuming way, with his halting step, his speaking voice coloured by the accent of his provincial background, with his trenchant prose style and his inexhaustible poetry, stands – yes – highest.

The author is editor of PN Review *and head of Carcanet Press.*

Limiting the contracts

Ewan Ferlie and Jan Pahl argue that it is in the universities' interest to offer a new deal to research staff

In his recent letter on the development of a strategy for higher education, Sir Peter Swinnerton-Dyer asked a number of questions relating to research. He suggested that cuts had fallen more heavily on research than on teaching and he asked universities to provide evidence of the extent of these cuts.

There is plenty of evidence to suggest that research staff themselves are unhappy with the present situation. In November 1982 the first national meeting of contract research staff, convened by the Association of University Teachers, was large and vociferously angry.

Discontent at local levels has led to a number of studies in different universities which have investigated the conditions of service of current researchers. This article draws on a study carried out at the University of Kent last October, with background material from a similar study carried out at Bristol University in 1981.

In the Kent study 38 of the 79 contract research staff in all disciplines at the university filled in a postal questionnaire designed to provide data comparable to that coming from other studies of research staff. Eight of the respondents were female and 30 were male; their average salary was £9,716, with a range from £6,400 to £16,400; their main sources of funding were the Department of Health and Social Security (16), Science and Engineering Council (9), Social Science Research Council (4) and various other bodies (9); there was a higher response rate from social scientists than scientists. No research staff who responded were funded from UGC money.

Both studies underline the extent to which there is a dual labour market within universities in which research staff on short term contracts form an insecure and disadvantaged group. At Kent 53 per cent of those who responded to the questionnaire had less than one year of their contract left to run, while at Bristol the comparable figure was 60 per cent. The overall length of contracts of employment varied from a few months to five years, these more favourable contracts being concentrated in research units with rolling contracts.

Research staff still have to sign away their rights to redundancy payments or to protection against unfair dismissal; a request for maternity leave is likely to provoke delay and uncertainty as the university and the funding body argue over which is responsible for maternity pay; and, even though many researchers move from university to university on a series of short term contracts, no removal expenses are payable. In industry this degree of insecurity would be compensated for by very high rates of pay, but rates for contract researchers are low by comparison with those of tenured staff.

In the past, contract research was seen as a brief career phase; those who were successful typically moved on to a tenured post as a university lecturer. Successful researchers now have a choice between remaining in contract research in the university sector or leaving, either for research in government or industry or for other occupations.

In the Kent study many of the respondents were considering leaving: "I could solve my problems by going to work in the USA like most of my former research group"; "I am now unemployed but have a place at a college of education"; "I expect to have to move to commerce/industry, or the public sector, eventually".

A scientist summed up the problems of short term contract research and then commented: "Government/universities must be made aware of the *true* worth of research workers who contribute a major fraction of the overall research effort and who are the source from which 'centres of excellence' develop, to the benefit of the university concerned but not the individual."

The last few years have seen a steady increase in the proportion of university staff who are on short term contracts: what used to be a temporary problem for a small minority of the academic workforce is becoming a continuing problem for a substantial number of people. There are now over 9,000 full-time contract researchers in British universities and the proportion has increased from 13 per cent of total academic work force in 1967/68 to 21 per cent in 1979/80 (Williams et al. 1974; Salter, 1983).

Researchers contribute to the life of their universities in a variety of ways, not least in teaching. At Kent 66 per cent of researchers did some sort of teaching; at Bristol over half were involved in teaching, with 20 per cent carrying a teaching load over six hours per week.

Contract researchers remain a minority, however, and a minority which often lacks the right to participate in university decision-making. This means that any university which votes on the question, for example, of earmarking UGC funds for research is likely to produce a decision which favours teaching as opposed to research.

Universities are very anxious to attract research, with its attendant prestige and overheads, but seem equally anxious to avoid responsibility for individual research. A university's good name, its place in the league table, where the research income of each university is expressed as a percentage of its total income, while ignoring the career hopes of its research staff.

As Salter says: "The contracts by which researchers are employed effectively render them the grape pickers of academia: researchers are hired when they are needed and fired when they are not." (Salter, 1983, 19.) Yet in terms of qualifications researchers are not grape pickers: just under a half of all the Bristol researchers and just over a third of all the Kent researchers, had PhDs.

In many ways the problems faced by today's university researchers are cohort-based. Encouraged to enter academic life in the 1970s, these are the people for whom the gate to tenure crashed shut just as they reached it. Thus 63 per cent of the research staff at Kent were aged under 35; the comparable figure for university staff as a whole is 26 per cent.

Such conditions would be more defensible if researchers were making only marginal intellectual inputs. One argument has always been that research workers typically act as "technicians" collecting data but not being concerned with project design or the final report. However, the Kent survey showed that the vast majority of research staff, even at the most junior levels, undertook responsibility for all three stages.

The case in equity for improvement in the pay and conditions of research staff has long been self evident. Efficiency considerations increasingly form a second argument that will appeal to even the hardest of hearts. The too-frequent cases of research assistants on short-term and badly-paid contracts deserting half-completed projects represent a clear example of this efficiency argument.

However, a much more fundamental question arises: to what extent does the growth of costly and large scale research imply specialist roles and careers?

Research can be undertaken either by lecturing or by specialist research staff. The extent of specialization has traditionally been lower in humanities research than in natural science, where a tradition of large scale research has been built up in such centres as the Cavendish. Social science represents an intermediary discipline where individual and institutionalized modes of research coexist.

The push towards institutionalized research now derives from two main causes. The first is the rapid creation of new branches of knowledge in high technology sciences such as computing and biotechnology and applied public policy studies.

The growth in American policy evaluation dates from the Great Society programmes of the 1960s. While the increase in British capacity is both less spectacular and dates from a later period, it too is taking on increasing significance in research sponsored by such departments as the DHSS, the Department of Environment and the Home Office.

Second, funding bodies such as industry and Government departments have needs for different kinds of research from that supported by the traditional dual funding system. The task of creating new paradigms in emerging subjects can hardly be undertaken by teaching departments where skills are broad rather than narrow, where cross-disciplinary cooperation is often lacking and where numbers are too small to allow for sufficient specialization.

The new "triple funding" system reflects the demands of sponsors whose needs are less for the small scale project (which can be undertaken by inhouse research and development capacity) than for concentrated investment in research centres which can carry forward long-term empirical and theoretical work across traditional boundaries and undertake diffusion of their main findings. In applied policy studies some of the most exciting work, revolving around the construction and evaluation of innovative forms of public provision, can only be realistically undertaken, given difficulties in securing access and implementation, within a long-term timescale.

This argument might be criticized for excessive functionalism. Pressure for increased specialization has been resisted by British academics as a threat to traditional all-round values and collegiality (Halsey and Trow, 1971).

Research is prized – but not specialist researchers. However, this picture may change drastically, in the new climate of retrenchment and selectivity when universities may promote large-scale research activity as a means of avoiding threats to their research function and of attracting outside funds (Moore, 1983).

But a triple funding system will place very different demands on university research from those which it has traditionally served and is likely to imply both an increasingly specialist division of labour and a more stable and continuous framework for research. For the first time it is in the self interest of universities to offer a new deal to research staff.

The authors are research fellows in the University of Kent, in the personal social services unit and the health services research unit respectively.

BOOKS

Out of the parlour, into the laboratory

by John Ziman

Science and Parascience: a history of the paranormal, 1914–1939
by Brian Inglis
Hodder & Stoughton, £12.95
ISBN 0 340 26325 3

Séances, ectoplasm, table-rapping, telekinesis, clairvoyance, psychic photography – we know about them as we know about antimacassars, tandem bicycles, smoking jackets and guineas. It is not exactly that they are obsolete; they are just decidedly oldfashioned, and not to be taken very seriously.

The great days of the Society for Psychical Research (SPR) were before World War I, when it was not out of keeping for a reputable scientist, even the President of the Royal Society himself, to participate in these mysterious and undignified goings-on. Nowadays, respectable parascience (if that is not a contradiction in terms) deals out interminable hands of carefully randomized Zener cards, to be perceived extrasensorily by voluntary subjects whose guesses are recorded electronically and statistically analyzed for an outside-chance score. In fact, the paranormal has moved with the times, into a graceless era.

This is the transition chronicled by Mr Inglis, from the pseudopods and phantom voices manifesting themselves around a physical medium, to the purely mental phenomena of telepathy and precognition. The history of the SPR itself, between the wars, is a chronicle of the decline of the traditional style. It was rent with internal conflicts, between the "high and drys", who took an austerely sceptical view of most reports of psychic phenomena, and those with a much more confident attitude to the possibilities of a breakthrough. The topics of controversy were, as always, the sincerity and integrity of mediums and their investigators, compounded by the ploys of would-be publicists and professional magicians.

The course of events in the United States, and in the rest of Europe was very similar, although not so politely institutionalized as in Britain. By the mid-1930s, psychical research had moved from the dimly-lit parlour to the university laboratory, with J. B. Rhine at Duke setting the style. Mr Inglis does not pretend to cover in detail the period since World War II, although those of us who have watched from our dugouts the intellectual buffoonery and subsequent red faces generated by the Uri Geller skirmish would like to know what he makes of this reversion to the psycho-physical paradigm in manifestations of the paranormal.

Mention of a contemporary episode is not irrelevant to a review of an historical study because it is so extraordinarily difficult to assess the significance of past episodes in this odd but fascinating activity. I think I know what I believe about Uri Geller and the people involved with him because I know some of them personally, have read the works of others, and was able to follow the story as it unfolded on television and in the pages of *Nature* and *New Scientist*. This would give me some basis on which to judge whether somebody else describing the same events was grossly misinformed on such relevant matters as the character and competence of individual witnesses, the current climate of scientific opinion, the temptations of publicity and the professional costs of nonconformity. These contextual considerations are very difficult to weight up in relation to events that took place half a century or more ago, in a cultural climate that has changed, among people, however eminent, whose personalities are only known to us in silhouette.

Surely one should not have to take such a very localized view of events the significance of which must be universal if they did occur as reported? The essence of a scientific discovery is that it transcends its immediate context however bizarre and contrived the circumstances, what is observed is only interesting scientifically if it can be interpreted as a particular case of a more general class of facts or phenomena. Also the study of the paranormal has not yet crossed this threshold into the archives of scientific knowledge. The movement of psychical research out of the parlour into the laboratory is obviously motivated by this fundamental principle of the philosophy of science, but is still without evident success. If we are to take any notice at all of the types of events mainly reported in this book, we have to accept that they have not proved reproducible, have not been integrated into a coherent explanatory scheme, and have too often occurred under conditions where deception or self-deception cannot be convincingly eliminated. In other words, there is no way as yet of thinking about them, except in the cultural, psychological and material milieux in which they are said to have occurred.

Mr Inglis manages to paint in the background pretty well. He seems to have read widely in English and French, and quotes aptly from many sources. Drawing detail from the published accounts, he sets the scene vividly, sketches in the characters of the participants, and records succinctly the successive volleys of argument and counterargument about the credibility of what is supposed to have happened. His drama is played by an impressive cast of participants and critics, and he feels bound to mention a miscellany of cases from the spoof photographs of fairies that took in Conan Doyle to the premonitory dreams of J. W. Dunne. It is obviously going to be a valuable secondary source for scholars venturing into this little corner of cultural history, but it can also be commended for its fluent, sympathetic and thoughtful style. It is a surprisingly agreeable book to read, in spite of the fact that it describes phenomena that Thomas Mann called "preposterous", and Maeterlinck "vain and puerile", and that many of the people involved must have been thoroughly nasty or silly. Or perhaps, fundamentally, parascience is a sweet and innocent pursuit by comparison with the real science of designing cruise missiles or racing with other rats for a Nobel prize.

But what you may ask, does he make of it all? Does he have an attitude towards the events that he chronicles? Of course he does – and he makes no bones about it. Mr Inglis admits, candidly, that his intention was to present the evidence *about*, not *for*, the paranormal but "found it difficult not to slip into the role of counsel for the defence". He gives the benefit of every doubt to the believers, and is uniformly scornful of the motives and capabilities of the sceptics. He regards as "unfortunate" the old SPR rule that all the results obtained with mediums later caught cheating should be set aside, and remarks at the "absurdity" of the assumption that when a conjuror shows that he can duplicate séance-room phenomena with the help of tricks, the phenomena cannot be genuine. His partisanship is so patent that unless one is also a strong believer one would be inclined to dismiss his account of events out of hand.

That could be a mistake. Would the account presented by a self-proclaimed sceptic by any more reliable or instructive? There is as much temptation to speculate wildly on how the effects were produced fraudulently by "natural" means as there is to conjecture on how they occurred supernaturally. Nobody will ever know, now, what really happened when that ghostly hand made its appearance in the gloom and rang a handbell far out of reach of the medium, or just what information might have been available to the clairvoyant who seemed to know so much about the intimate lives of total strangers. One might just as well start from the viewpoint of a would-be believer in the supernatural, whose motive is to bring such episodes to attention, rather than that of a sceptic who would induce us to dismiss them as impertinences before our curiosity can be engaged. The two are emotionally separated by a thin wall, topped with iron spikes or broken glass, not a rail fence over which one can sit relaxed, scattering pearls of wisdom to either side. Mr Inglis is sometimes ingenuous, but he is not deceived as to the controversial character of the evidences for parapsychological phenomena and gives plenty of information on the general nature of the objections and where one could find them set out in full.

So the implicit challenge is to go all up in the original sources, and make up my own mind. Must I really? A scientist, I am evidently supposed to have a complete and coherent picture, in which all the little difficulties are carefully tagged as "anomalies", to be investigated by all the resource and sagacity at my command. No such picture has ever been produced. Scientific knowledge is shot through and through with sorts of factual anomalies, and logical contradictions, which scientists struggle to resolve. There are some general laws of physics, of course, which are thought to be universal, but their validity only been tested thoroughly in a special and contrived circumstances. The policy favoured by both practitioners and philosophers of science is to proceed rather cautiously into unexplored regions of reality, and not to extrapolate too confidently from what has so far been well surveyed.

Some of the theoretical claims of some parascientists, such as precognition, or communication with the dead are so much at variance with scientific and everyday experience as logically inconsistent with the established structural conceptions of our being, that I do not find them useful as starting points for fresh thought or action. But other associated phenomena, such as telepathy, do not seem totally inconceivable in principle, even if I cannot see any means by which they could occur. Perhaps if I could devise a subtle experiment to test such phenomena a little further I would be willing to join this particular expedition of discovery, even if I had only the faintest notion where it might lead. But without such inspiration I must leave to return to my dugout, and pray for the sincere endeavours of Inglis and others – believers and sceptics who may eventually – who can tell? – enlighten us further on the nature of the universe and of humanity.

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In the course of a test séance at the Cesare Lombroso Academy of Psychic Studies in Santos, an alarmed Dr Carlos de Castro (right) looks on as a deceased poet (centre) "materializes" between him and the entranced Carlos Mirabelli, who had already achieved fame as a psychical medium. The photograph, reproduced in Brian Inglis's book, is supposed to have been taken as part of an investigation into Mirabelli's claimed powers, reported by Eric J. Dingwall in the *Journal of the American Society for Psychical Research* in 1930.

A case for electrons

How the Laws of Physics Lie
by Nancy Cartwright
Clarendon Press: Oxford University Press, £16.00 and £7.95
ISBN 0 19 824700 1 and 824704 4
Representing and Intervening
by Ian Hacking
Cambridge University Press, £30.00 and £5.95
ISBN 0 521 23829 3 and 28246 2

The problem of scientific realism, which concerns the existence of theoretical entities, and the truth of theories, has dominated much philosophy of science for two decades. These two new books in this area adopt the same novel position.

In the main, people have argued for or against theoretical realism on the basis of their views about the objects of scientific discourse. But while Hacking and Cartwright believe in things like electrons, they are against belief in the truth of our theories of electrons. Perhaps more original than this position is their reference to philosophically neglected aspects of science. Cartwright's arguments against theoretical realism involve considering models and approximations used in physics, while Hacking rests his case for realism about entities on reflections on experiments in science. Philosophers usually attend rather to the fundamental laws in theories.

Cartwright's view is that we have true beliefs at the relatively phenomenological level – for example, mass and charge of the electron – but that the success of our theories in explaining the phenomena does not in the end justify belief in the theories. Truth could be inferred back up into the higher reaches of theory if phenomenological laws were simply deduced from the more fundamental laws, but the nature of the approximations involved in recovering the phenomenological laws militates against the theoretical realist's inference.

Though partially anticipated by Feyerabend, this is an unusual line of argument which directs our attention to the details of scientific practice. This merit more than compensates for the weakness of parts of the argument which shows through in chapters two and three particularly. Here, and to some extent throughout, possible realist rejoinders are not given due attention. But other chapters develop a strong case against realism: the discussions of explanatory decay and the Lamb shift are particularly challenging. And in general Cartwright reveals an impressive mastery of the complexities of applications of quantum mechanics.

Hacking's book is an introductory survey of philosophy of science bearing on the realism debates. *Representing*, about theories, is mainly a review of the literature. *Intervening*, about experiments, is more original. Considering the breadth, the general level of sophistication is impressive. Also, some topics are so well treated that they will give fresh insights to specialists – for example, incommensurability. Hilary Putnam's internal realism, Imré Lakatos, and microscopes. Two chapters seemed to suffer from inattention to relevant literature. There are by now realist theories of language more satisfactory than that discussed in the chapter on reference. And these same theories embody a better version of the theory-ladenness of observation than those rightly dismissed in the chapter on observation.

Two chapters developing Hacking's more original contentions are less satisfactory. In "Positivism" he rejects the usual realist line that we should believe in atoms, electrons and photons because our theories about these things explain much about the observable world. He agrees that the positivist can just say that the evidence we have simply shows us that what the story says about the observable world is true. But he argues that the positivist must give up now the multiplicity of theories by means of our knowledge of their low-level properties in order to investigate parts of nature – as we do in some of the parity violation experiments mentioned in the last chapter. I accept that a role of electrons in experiments can convince us of their reality, but it must be as crucial as Hacking suggests. Positivism need not triumph with it. It might be that anti-atomism or anti-photonism were legitimate in the twentieth century not because of the failure of positivism, but because atoms and photons led to inconsistencies in accepted physics which were only resolved with the development of quantum theory.

Hacking ignores a number of philosophical options such as this because his presentation of the historical background to such issues is too brief and also superficial to rest philosophical claims on. On the claim that there is agreement about the theory of atoms, without giving a single example, the sort of disagreement that does exist. In general, however, a rich supplement of the book is its judicious use of examples from science. On the whole it is a very good and up-to-the-minute survey. I enjoyed reading it.

Patrick Enfield

Patrick Enfield is formerly lecturer in history at Trinity College, Dublin.

BOOKS

Withering of puritan ideas

Historians, Puritanism and the English Revolution: the religious factor in English politics before and after the Interregnum
by Michael G. Finlayson
University of Toronto Press, £23.00
ISBN 0 8020 5601 8

E.M. Forster once defined puritanism as the haunting fear that somewhere, someone might be happy. He could hardly have imagined that historians of the subject would adopt this attitude toward their readers.

No topic in early modern history requires as much arcane knowledge and hair-splitting precision to yield as little general understanding as does puritanism. From Perry Miller's vindication to remaking his own mind in the image of the puritans to Christopher Hill's devotion to remaking the puritans in the image of his own mind, historians have employed a bewildering variety of keys to unlock this mysterious and dynamic force. "Puritanism" is at once a religion, a cultural outlook, and a political tendency. It has a cosmology, teleology, and ideology. Thus definitions of puritanism involve taxonomic convolutions on a grand scale. Small wonder that students crammed with notions of presbyterians and pelagians, brownists and baptists, chiliasts and quakers can identify antinomian millenarians as a sect opposed to the cunning of hats.

Now comes Dr Michael Finlayson on an errand to lead us out of this wilderness. His text, in a slim volume, *Historians, Puritanism and the English Revolution*, is "wither puritanism?" What happens in less than a century to turn this force from being the mainspring of the Great Rebellion to being irrelevant to the Glorious Revolution? His answer is surprising on every level. Rather than explore the transformation of puritan thought or the vicissitudes of its experience Finlayson opts for a more basic approach – to question the existence of puritanism as a secular force altogether. For what is puritanism, he declares, but a model, an explanatory device that helps historians simplify the complexities of the past. Puritanism is not an object, but an idea that has been reified into an object. Its pernicious effect lies in its use as an explanation for revolution in the mid-century. Revolution, too, is a construct; an explanation which has been transmuted into the thing being explained. Modern historians created it and through its creation have opened a chasm in the underlying continuity of seventeenth-century history.

To illustrate these assertions, Finlayson conducts a withering review of modern historiography from which few emerge erect. Synthesizers like Lawrence Stone, who posit both puritanism and revolution, are easily dismissed. It is the empiricists that draw scorching rays. M.F. Keeler and David Underdown are berated for attributing to the membership of the Long Parliament puritan motives and puritan aspirations without being able to identify the religious affiliations of even a majority of them. There is no evidence, he claims, to equate Pym or D'Ewes or Holles with puritanism. Or rather, historians have provided none that is unequivocal. Finlayson does not seem to realize that to precise scholars, confusion over definitions is not the same as ignorance. The more we learn about subtle religious differences, the fewer political actors can be positively labelled. Like clarifying presbyterian-independents, distinguishing a Particular from a General baptist is a work of fine tuning.

If Finlayson can go one better than the wag who was opposed to all "isms" but baptism, what explanation does he offer for the supercharged religious atmosphere of the seventeenth century? His answer is to collapse all varieties of protestantism into fear of catholicism, either in its pure anti-papal form or in the Arminianism of the 1630s. Fear of catholicism was not an issue of "hot protestant" reform, but one of protecting traditional protestant practices and beliefs. Even the debates on episcopacy, he baldly asserts, were simply a manifestation of protestant anti-clericalism rather than an effort to reform church structures. The advantage of such a view is that Finlayson can show anti-catholicism to be a constant religious motivation across the seventeenth century. In two brief chapters he describes isolated incidents, first in the 1620s and 1640, and then in the period 1666–1689. All are tied together by anti-catholicism. Rather than the radical disjunction of seventeenth-century history, one common theme dominates secular perceptions of religion. Here is the consistency in the career of Edward Hyde, reformer in 1640, restorer in 1660 – a historian who believed in neither puritanism nor revolution.

Is it the case, however, that anti-catholic sentiment was stronger than the desire for "hot protestant" reform in the intervening period? Was there not a rule of the saints between 1640 and 1660 that reformed churches, tolerated tender consciences, and devolved ecclesiastical power? On this Finlayson is silent. He passes over the Interregnum as part of the self-imposed limits of his project. *This is a little like visiting Dr Jekyll only in the morning and finding him rational and consistent.* Those who have to tidy up the nasty bits of night must be excused if they demur from his view.

Mark Kishlansky

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Network of the elect

The Puritan Gentry: the great Puritan families of early Stuart England
by J. T. Cliffe
Routledge & Kegan Paul, £18.95
ISBN 0 7102 0007 2

J. T. Cliffe's first major work, published fifteen years ago, was a pioneering study of the Yorkshire gentry from the Reformation to the Civil War. Now he has raised his sights to cover the whole of England but at the same time narrowed his focus to include only those families whom he categorizes, with good reason, as puritan.

"Puritanism" is, of course, one of those vague terms whose meaning has been so disputed that some historians would prefer not to use it. But if puritanism cannot be easily defined it can at least be recognized, and by looking at the life style of such families as the Barringtons of Essex, the Barnardistons of Suffolk and the Harleys of Herefordshire Dr Cliffe shows us puritanism in action. His book does not consist of potted histories of the major puritan families. Instead Dr Cliffe has used the evidence of their surviving papers, in which he is deeply read, as well as sermons and other published writings, to analyze the phenomenon of gentry puritanism.

He begins with the belief in predestination and shows how puritans not only took it for granted that salvation was confined to the elect but felt reasonably sure that they were numbered among the fortunate few. It could be argued, of course, that certainty of election destroys morality, since however dissolute a man's life it cannot affect his fore-ordained salvation. But such a view was anathema to the puritans, for they believed that the elect were distinguished by their godly conduct. Indeed, while they could never be absolutely confident of their election to grace they drew comfort from the thought that their impulse towards virtuous living and their constant struggle to achieve it were an indication that God had indeed singled them out.

Puritanism was, in one sense, introversive, for salvation was a private matter and it was the responsibility of all men and women to keep their thoughts and actions under the scrutiny of conscience, to be perpetually aware of the tendency to sin, and to have frequent and fervent recourse to prayer and the scriptures in order to overcome human frailty. But their resolve was strengthened by the knowledge that they were part of a much greater godly community which extended far beyond their local or family horizons. Puritan gentry in different parts of England kept in touch with each other and encouraged their children to intermarry. When they sent their sons to university they chose colleges such as Emmanuel and Sidney Sussex at Cambridge or Magdalen Hall, Exeter and Lincoln at Oxford, where they could be sure of meeting fellow puritans. While at university the sons of gentry families would often make the acquaintance of puritan clergy to whom they would subsequently offer patronage and protection. They thereby created a national puritan network, embracing both clergy and laity, which was a source of great strength, particularly in the 1630s when Laud and his fellow Arminians were attempting to impose a pattern of high-church uniformity.

As far as public activities were concerned, puritan gentry were not all that different from their non-puritan neighbours. They were usually Justices of the Peace and took their magisterial duties with becoming seriousness. They were not necessarily averse to horse-racing and often enjoyed a game of bowls. Some even played cards, but only for small sums of money, for they were in general opposed to gambling. They were inclined to regard stage plays as the work of the devil, and one of the reasons for their alienation from the culture of the court was that masques and plays were not merely performed there but usually presented on a Sunday. Yet Sir Thomas Barrington occasionally went to the theatre and owned a copy of the second folio of Shakespeare, while Harley's library included a volume of Jonson's plays. Puritan gentry, in short, were not totally opposed to entertainments, but believed they must be indulged in with moderation and an awareness of the danger they posed to standards of moral conduct.

Puritans could never afford to relax their guard, for the devil was always poised to attack and the slightest relapse could betray the fortress of the individual soul. What they valued most was self-control such as that of Sir Nathaniel Barnardiston, who was said to be "so far from the appearance of lightness or excessive mirth that in thirty years together none ever heard one syllable from his mouth tending to any wanton expression that might offend the most chaste mind or ear". Such men cannot have been easy companions, and their combination of a high moral tone and pride in their elevated social status with professions of their total unworthiness and their contempt for human vanities laid them open to the charge of hypocrisy. Yet for better or worse they moulded the history of England in the middle years of the seventeenth century and their legacy is with us still. Anyone who wishes to understand their character and motivation will find in Dr Cliffe's book an excellent guide.

Roger Lockyer

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Public testimony

The Puritan Conversion Narrative: the beginnings of American expression
by Patricia Caldwell
Cambridge University Press, £17.50
ISBN 0 521 25460 4

"True knowledge of Christ is experimental" wrote the puritan divine Thomas Taylor. The sad fate of Ignorance in *The Pilgrim's Progress* encapsulates the puritan conviction that it is personal experience of saving grace which defines the true Christian and offers the only hope of salvation.

To determine that one had undergone conversion and was numbered among the regenerate elect was hence, as Richard Baxter wrote, a matter of "unexpressible consequence". Encouraged by the Pauline admonition to examine yourselves, whether ye be in the faith" (II Corinthians xiii, 5), introspective self-analysis became, except among antinomian radicals, a chief spiritual duty. Its results were often recorded for the individual's own consolation and encouragement, but this did not remain a private, closet duty. In the separatist and independent traditions church membership was conditional upon a convincing relation of spiritual experience delivered publicly before the gathered church, and presbyterians, though they abominated the enthusiastic premises and the exclusivism of this practice, yet firmly believed in the desirability of communicating for the edification of others "what the Lord hath done for my soul" (Psalms lxvi, 16).

Since the work of William Haller and Perry Miller in the 1930s this cast of mind has been explored in theological studies of the puritan doctrine of the Holy Spirit, in ecclesiastical and historical studies of the church polity of congregationalism, and in literary studies of spiritual autobiography. It is this territory Dr Caldwell has chosen to investigate once again, taking up what is apparently well-worn and not very promising material. The general view of the run of puritan autobiographies, English and American, is that they follow a stereotypical pattern, dutifully rehearsing predictable stages in the *ordo salutis*. In the event, her decision to examine it afresh is splendidly vindicated. Her constantly stimulating and illuminating study is meticulously detailed, lucid and cogent as well as being original, sensitive and percipient.

Working with a small body of unremarked and unremarkable texts – chiefly the 51 testimonies delivered to Thomas Shepard's church in Cambridge, Massachusetts, between 1637 and 1645, in comparison with the English independent collections of Henry Walker and John Rogers – she is able to revise our sense of the "New England way", to defend the variety and integrity of spiritual autobiography, to distinguish (even at this early date) American and English sensibilities, to present a hitherto unsuspected stage in the history of the American imagination, and, incidentally, to write with fine tact and sympathy of the halting attempts at self-expression of ordinary people.

Dr Caldwell convincingly reconstructs from slight and elusive evidence the evolution of the personal relation of experience as a distinct part of congregational admission procedure from its beginnings in late Tudor and early Stuart separatist churches. She points out that in New England it came to have a crucial significance: civil rights depended upon church membership, as they did not in England; it was the only form of admission, as it was not in the heterogeneous Cromwellian church; and New Englanders did not, like their English brethren, hold subsequent "experience meetings" for admitted members. In a brilliant analysis of the controversy with English (mainly presbyterian) critics of its insistence upon verbal proof of regeneracy, she ably refutes the common charge of rigidity levelled against the New England way, and argues that, on the contrary, its tendency was democratically, imaginatively and creatively liberating. "The language 'skills' of believers knit church society together", but these skills consisted in the sincere, unfettered utterance of individuals, not in compliance with received rhetorical formulas. The conviction that language could effectively communicate hence characterized the earliest American society.

Dr Caldwell's account of what was communicated reveals that emigration replaced conversion as the central concern, and that, unlike the confident and conclusive English testimonies, bafflement, bewilderment and disappointment is the recurrent note struck by settlers suffering not only physical hardship bet unexpected deadness of heart in the New English Canaan. The Atlantic proved to be more like the River Lethe than the Red Sea. In their struggles to express this unprecedented experience, which the traditional language and structure of spiritual discourse was ill-fitted to articulate, Patricia Caldwell entirely succeeds in persuading us to hear "the first faint murmurings of a truly American voice".

N. H. Keeble

Dr Keeble is lecturer in English at the University of Stirling.

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BOOKS

German ideals

Between Elite and Mass Education: education in the Federal Republic of Germany
from the Max Planck Institute for Human Development and Education
State University of New York Press
$49.50 and $16.95
ISBN 0 87395 709 1 and 708 3

Wilhelm von Humboldt

The ghost of Wilhelm von Humboldt stalks this collection of essays, although the only mention of him is in a footnote. It is to him that Germany's tradition of elite education – high culture in the *Gymnasium*, scholarship and research in the university – owes its inspiration. True to the title, German education is in uneasy transition, no longer confidently adhering to the Humboldt ideals, yet unable to come to terms with alternative ideals to inspire an expansion which can stand comparison with the bountiful provision in the United States.

The purpose of the essays is to encourage just this kind of comparison. They began life as popular lectures to be used by the Goethe Institutes around the world and were then assembled as a paperback for home consumption, a handy manual to help parents, teachers and pupils understand their own education system. Now they have been updated in this English-language edition aimed primarily at an American readership. Not surprisingly, given this background, the book is rather shapeless, but individual chapters offer enough stimulation to make it more than just a description of education in Germany, sector by sector.

To launch the collection on its new comparative course, Dietrich Goldschmidt has contributed an opening chapter tracing the reciprocal influences of the United States and Germany on one another. Benjamin Franklin is credited with having started the transatlantic educational traffic when he visited Göttingen in 1766. That university's famous magnetism was such that by 1855 there was a formal American fraternity on the Burschenshaft model. From the opposite direction the interest which German academics took in developments in the United States led to close connexions between the Massachusetts Institute of Technology and the technical universities of Berlin and Aachen. These contacts are charted with such precision that the footnotes sometimes outshine the text in interest. The account is at its best when John Dewey rises head and shoulders above his contemporaries in his perceptiveness about German national overconfidence.

The catastrophic results of that overconfidence were not blamed on the Humboldt legacy in the years after 1945 and the chapter on "democratizing elite education" rightly points out the significance of the victory of the traditional outlook over American attempts to introduce comprehensive schools. The reciprocal influences played their part in this. Thirteen prominent professors in American universities, who had emigrated from Germany in the 1930s, produced a much quoted memorandum rejecting American ideology and upholding the classical *Gymnasium* as the cornerstone of German education.

The subsequent story was of slow and cautious development which allowed something of the Humboldt inspiration to survive until a major change finally came in the 1970s, when escape from the broad canon of subjects required for university entrance became possible. It was quickly followed by fierce controversy. As the author declares, "the reform of the *Gymnasium's* upper level struck at the school's philosophical foundation, namely at the identification of general preparation for university study with the education proper to a cultivated person". This is the nearest thing to a central theme to the book and it would have benefited from extended treatment, if necessary at the expense of some of the routine descriptive content which is readily accessible elsewhere.

The true victory of the Humboldt tradition lies in the other feature of the reform which is most of all surprising to a British observer. This is that the fundamental change in the way the secondary curriculum is organized could be introduced without the concomitant step of making corresponding changes in the arrangements for university entry. In schools it became possible to indulge in "tactical" choices of subjects as the easiest way of securing a university place (since some subjects were not considered more equal than others for this purpose) and thereby to avoid doing those subjects that were the most important as a foundation for university work. The idea of greater specialization in schools is difficult to reconcile with a complete absence of course requirements.

The survival of this Lowlife suggests that Humboldt's ideals have been easier to protect in the universities than in the schools. If so, the case for development of the theme is intriguing. The starting point could perhaps come from the opening chapter's quotation of Abraham Flexner's complimentary remarks about government attitudes to higher education, praising "the promotion of German universities by knowledgeable outsiders".

Arthur Hearnden

Arthur Hearnden is secretary of the Standing Conference on University Entrance.

Without ideology

Theory and Practice in Education
by R. F. Dearden
Routledge & Kegan Paul, £11.95
ISBN 0 7100 9910 X

Professor Dearden's chief merits as a philosopher of education are clarity, level-headedness, honesty in facing the central questions squarely, and willingness to connect these questions with educational practice.

His excellent book consists of a collection of essays (unconnected except by the tenuous notion of "educational theory"). There are four on theory and practice, perhaps the most valuable part, three on curriculum, four on autonomy and learning, and two on primary education. I would single out for special praise his piece on education and politics, in which he shows that not all issues can sensibly be described as political, and argues against the "totalitarian argument" that "if any act has a political significance through the bearing of its consequences, then *ipso facto* that significance must take precedence over any other," and opts for an empirical, ad hoc view of the matter: "We are free to choose the nature and extent of the control which the state would exercise according to such considerations as may seem best at some particular historical juncture."

More sharply and critically, he shows the absurdity of "ignoring the understanding which accompanies and indeed importantly constitutes human behaviour", and that "there is more to behaviour than its topographical configuration": as quick and effective a demolition of behaviourism as I have seen. Chapters on educational theory and philosophy and on the assessment of learning are also to be recommended.

There are two things about which Professor Dearden does not come clean, or where he fails to justify what looks like a substantive rather than a philosophical view. The first is the nature of philosophy itself; his judiciousness inhibits him from stating clearly, or clearly defending, any particular line. However, in the book as a whole he proceeds for the most part non-ideologically, and is concerned with the validity of argument and with clarification, without putting his points in an excessively "linguistic" style. No one, I hope, can quarrel with that.

The second is the nature of education; and that is perhaps a more serious deficiency, since much that he says in the book flows from a particular concept of education (or, a particular view on what education ought to be about) which is not defended. He is content to mention it as an idea which "has gained much though by no means complete support among English-speaking philosophers of education". This is to develop the idea of the individual as an autonomous chooser with a recognized right to construct his own life within wide moral limits".

These two omissions in the book are connected, because with much of what Dearden says (about autonomy, for example) one is or ought to be desperately anxious to know what sort of proof or grounds he thinks are relevant to back up his views. It would be possible, for instance, to take the propositions quoted above as either incorporating ideas which were, by logical or conceptual necessity, part of or connected with *any* concept that could reasonably be marked by "education", and hence necessarily true; or as representing merely a statement of unargued ideology which could be disregarded by those not of liberal persuasion. In my opinion, his views could be strengthened by showing them to be incumbent on anyone who seriously wished to *educate*, but whether that is so or not, the distinction is important for philosophy of education in general. Different philosophers have, independently, taken different sides here, and the issue needs more discussion.

The general standard of the book is so high, however, that these criticisms are not so important as they may seem. Any teacher or educator, as well as any philosopher of education, will find it a most useful guide and companion to a large number of issues both theoretical and practical; and "useful" is meant in a term of the warmest praise, when we consider the mixture of muddle and ideology so often dished out to us in this field.

John Wilson

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Refuting relativists

Philosophy and Educational Foundations
by Allen Brent
Allen & Unwin, £18.00 and £7.95
ISBN 0 04 370143 4 and 370144 2

Philosophy of education has a tendency to cling to the coat-tails of philosophy reflecting with a suitable time-lag whatever are the current preoccupations of the larger discipline. Allen Brent has tried to move the debate on from pure conceptual analysis to reflect contemporary interest in language, structure and translation.

His exceedingly ambitious book seeks to relate anthropology, psychology, sociology, linguistics, curriculum theory and classroom practice, an undertaking which involves consideration of such diverse thinkers as Marx, Skinner, Wittgenstein, Quine, Chomsky, Einstein, Marcuse and many others, both lesser and greater. Some get surprisingly short shrift. Hume, for instance, is accused of "feeble awareness" and the presentation of "garbled truth", Skinner with incoherence and Freud with not clearly distinguishing between sublimation and repression.

Because of its scope this is not an easy book to summarize. But it is possible to say broadly that what Brent does is to draw a relationship between first, what there is; secondly, how we experience what there is – whether as sensory stimuli or in the empiricist account, or by imposing our own categorization and construction on it; and thirdly, how we describe what there is. Here Brent speaks of an isomorphism between language and the world and sees the alternative viewpoints as corresponding to either the early Wittgenstein's view of language as referring to the world or the later Wittgenstein's reference to family resemblances, which Brent incorporates into a theory containing three elements: the "family-resemblance" notion itself, Hirst's analysis of forms of thought and Chomsky's notion of language universals.

One must ask to whom this complicated and sophisticated theory is directed – a question that presents an immediate problem since several chapters in the book take the form of anecdotal descriptions of teaching practices clearly intended to interpret the theory in terms which will be comprehensible to the student-teacher. But the type of thesis just outlined would clearly be of interest only to those working at the frontiers of logico-linguistic debate in philosophy. Other chapters are purely expository, but the exposition is neither easy nor elegant. It should be said that in the end the author's decision seems to be in favour of the practical reader, for the conclusion to which the book leads is a justification of multi-ethnic education and religious knowledge as a school subject. The connexion between this and the main arguments is that in, as he hopes, refuting relativists and behaviourists, Brent believes he has shown the possibility of a common human curriculum which transcends the boundaries of culture, time and place – as he puts it, taking up the theme of his previous book, a transcendental deduction of the curriculum.

But how well does he achieve this ambitious end? Unfortunately, only in a way which is flawed by small but irritating errors, immodestly critical of major theories, and ultimately mistaken. Small errors include solecisms such as singular nouns with plural verbs and vice-versa, mis-spellings, and the brief but engaging appearance of a character called a "cultural relative" (for "cultural relativist") which suggests momentarily a play-group uncle.

On the major theories Brent calls down a thunderous fire on all the behaviourists, from Watson to Skinner, that operant conditioning, because it is statistical and yields only probable judgments in relation to individuals, is ultimately in conflict with human determinism. At the same time though, he sees the assumption of determinism as common between both Skinner and Marx and makes this a fundamental point in his own argument that humans are rule-following rather than rule-conforming beings. The other basic error he finds in behaviourism is the assumption that there is nothing problematic about the human ability to universalize – to spread, that is, to an object as "same". He believes that ideas of both Wittgenstein and Chomsky must be brought to explain this phenomenon.

It is in this area, though, that the claim must be made that Brent's thesis is ultimately mistaken, even if it supports his general thesis about the limitations of both Marxism and behaviourism in explaining human behaviour. For much of the argument turns on a major misinterpretation of Chomsky as having discovered a "semantic structure common to all human languages", whereas, in fact, Chomsky's work deals with syntactic structures. This makes it inappropriate to compare it with Wittgenstein's notion of "family resemblance" which is concerned with meaning rather than structure. And neither have very much to do with Hirst's "forms of thought" which are *categories* of thinking distinguished principally by the kinds of truth which are applicable to them.

It is arguable that the philosophy of education does not need the kind of development Brent is trying to achieve, even if this were to be done effectively. On the contrary, it may still be better in this field to start from the problems education itself throws up rather than trying to interpret the teacher, current academic fashion sees as empiricist in implication, or the

Brenda Cohen

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BOOKS

Bizarre puzzles

The Quantum World
by J. C. Polkinghorne
Longman, £7.95
ISBN 0 582 44682 1
Modern Logic and Quantum Mechanics
by Rachel Wallace Garden
Adam Hilger, £18.00
ISBN 0 852 74457 9
Quantum Mechanics
by P. C. W. Davies
Routledge & Kegan Paul, £3.95
ISBN 0 7100 9962 2

Quantum theory, it may be said, has two things in its favour and only one against. First, it agrees with all the experiments. Second, it is a theory of astonishing and profound mathematical beauty. The only thing to be said against the theory is that it makes absolutely no sense.

Indeed, such a bizarre collection of ideas would hardly have been put forward had it not been the case that an equally bizarre and seemingly contradictory collection of experimental facts had forced themselves on the attention of the physics community. Particles can behave like waves and waves like particles. Objects trapped inside energy barriers can nevertheless escape provided that they are able to do it fast enough, "borrowing" from that very uncertainty in energy which is asserted by Heisenberg's principle. Spinning objects must choose their states of spin from only a finite number of possibilities, yet the possibilities which are available seem to allow a complete continuum of directional symmetry.

According to the basic principle behind the laser (Bose-Einstein statistics), photons are attracted into thoroughly occupied states, the more occupied the state, the more the photons are attracted into it. According to the phenomena of superconductivity and superfluidity, resistance can be reduced *literally* to zero. Chemical bonding, with its discrete characteristics, arises quantum-mechanically from the continuous electromagnetic field. Under suitable circumstances when two objects are widely separated from one another, if one of them is observed, it can seemingly affect the other by an "influence" not constrained by the velocity of light, yet in a way by which no actual information can be transmitted (the Einstein-Podolsky-Rosen "paradox").

If a system is allowed two alternative routes to achieving a certain outcome, it may be that the two "cancel out" rendering the outcome impossible even though this would have been perfectly possible had just *one* route (either one) been available. A familiar instance of this last phenomenon occurs with the "two-slits experiment": atoms are fired through the slits at a screen, and when both slits are open, dark (that is, unreached) patches appear on the screen at places which would be bright with either slit open singly. All these, and many more, are striking manifestations of the strange principles lying behind quantum theory. Since the facts are themselves bizarre, it is not so surprising that a bizarre theory is needed to explain them.

Yet such bizarre features seem to be taken beyond reasonable limits when one attempts to carry those same quantum-mechanical principles over to the macroscopic realm. An oft-cited theoretical example is the thought experiment referred to as "Schrödinger's cat". The cat is to be placed in an isolated container in which is some lethal device whose triggering, or otherwise, is to be "decided" by some quantum process. The strict rules of the theory tell us that so long as we do not peer into the box (that is, perform a "measurement") the cat is neither dead nor alive but exists in some mysterious combination of those two states, to be "collapsed" into one or the other only at the moment of "observation".

The theory is, as conventionally presented, a curious mixture of two seemingly contradictory (but necessary) ingredients. The first (E) is (or is equivalent in some form to) the Schrödinger equation, according to which physical states evolve in an entirely deterministic manner. Although this part is similar in principle to the older classical deterministic physics, according to E. Schrodinger's cat evolves into the above unholy mixture. The second ingredient (O), is brought in when an "observation" is deemed to have been made and is of an essentially non-deterministic nature. It is O which is needed to allow the cat to find peace in either death or life. Both ingredients are required for the (standard) theory.

There seems to be no (acceptable) way of deducing O as a consequence of E, even though one would be inclined to think that the laws governing the behaviour of a macroscopic observing system are deducible from submicroscopic ingredients for which E holds sway. There is much profound and beautiful mathematics involved in E, which provides it with a significant aesthetic support in additional to all of the support that comes from experiment. Yet there is mathematical elegance also in O, and most particularly in the subtle way in which the so-called "unitary" structure of E blends in with the probability laws of O, so much so that there seems no way of divining any precise moment at which O takes over from E.

Of these three short books, it is unquestionably John Polkinghorne's *The Quantum World* which sets out most clearly the origins, the strengths, the strangeness and the paradoxes of quantum mechanics. It is a delightful book, written at a popular level but without any misleading over-simplification. Although some basic mathematics is presented (apologetically) where necessary, this should not deter even the least numerate of readers. The book is written with authority, but also with a humility that one might expect from an author who gave up a prestigious chair at Cambridge to become an assistant curate. (And this was not at all because of any disillusionment with physics, but rather because he felt he had reached an age where those younger than he should be encouraged to carry on in his stead.)

Polkinghorne treats the "philosophical" problems of quantum mechanics from the standpoint of a practitioner, rather than one who pontificates from the outside. He asserts that he is "a dinosaur and not a palaeontologist", commenting, very reasonably, that "a live dinosaur might have a thing or two to tell the students of the fossil record". The book has its share of whimsical humour. I am glad that he refers to the practitioners of his art as "quantum mechanics", and I am sure he is right when he claims: "Your average quantum mechanic is about as philosophically minded as your average garage mechanic". He himself, however, is no average quantum mechanic; and his assessment of each major interpretation of the theory as it stands today – none of which is wholly satisfactory – has much insight and is clear and to the point.

I am far less happy with Rachel Wallace Garden's *Modern Logic and Quantum Mechanics*, in which she presents an unusual viewpoint, suggesting that an understanding of the "paradoxes" can be achieved through a study of the formalism of modern logic – although she rejects the previously held claims to understanding which are based on a "non-Boolian quantum logic". Aimed at a more specialist audience, but providing introductory explanations for the main ideas that are used, the book would be tough going for any reader who has no knowledge of the formalisms either of quantum mechanics or of symbolic logic. (Things are not helped by the presence of irritating misprints at crucial places in definitions and of certain physical inaccuracies – for example, in the discussion of the two-slits experiment.)

The book is concerned almost entirely with the O part of the theory at the expense of E. I am myself doubtful how much insight can be gained this way. Although I personally find her conclusions somewhat unconvincing, I should not wish to deter other readers, more open-minded than myself. All avenues should be explored if one hopes to obtain the new insights (or a new theory) that I believe to be necessary; and this particular avenue does have its genuine novelty.

Paul Davies's *Quantum Mechanics*, on the other hand, makes no attempt at novelty or to come to grips with these puzzles and philosophical issues. It is essentially a straightforward introductory text for the training of quantum "mechanics". As the first in a new student physics series, it is very clearly written; and I believe it will serve its purpose well. Doubtless its readers will be seduced, as they should be, by the compelling nature of the mathematical formalism, and may eventually be lulled, as so many are, into accepting – without questioning foundations. Unlike Rachel Garden's book, this one is almost entirely concerned with E rather than O. Where Davies touches on philosophical issues, he aims at setting the reader at ease: "We are used to talking of crime waves . . . They are not waves of undulating stuff but *probability* waves . . . Matter waves are also probability waves".

I doubt, however, that too many will be lulled by: "Should we say that in some sense the particle passes through both slits? A better description is to say that there are two possible worlds, one with the particle going through slit A, the other . . . through slit B. When the pattern is there, both these worlds coexist in superposition". But I am being unfair. Davies has given his own account of the philosophical issues in an earlier popular book *Other Worlds*. His new book is not directly concerned with such issues; it gets down to business. It is, indeed, a very useful, readable and relatively inexpensive technical introduction to the subject.

Roger Penrose

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Studies of dragonflies by August Johann Rösel von Rosenof, from *Die monatliche herausgegebene Insecten -Belustigung* (Nuremberg, 1746/61), reproduced in Klaus Kabisch and Joachim Hemmerling's *Ponds and Pools: oases in the landscape*, published by Croon Helm at £8.95.

Oil sources

Petroleum Geology
by R. E. Chapman
Elsevier, Dfl.115
ISBN 0 444 42165 3

During the past 15 years there have been major advances in our understanding of petroleum geology and applied sedimentology – all of which bear directly on commercial exploration.

The theory of plate tectonics and new work on seismic stratigraphy, organic geochemistry, diagenesis, and other oil-centred topics has provided the impetus to transform the teaching of such dull subjects as traditional stratigraphy, geological history and geosynclines. A petroleum geology textbook for the 1980s must include this new material and should treat it at a level sufficient for industrial practice; indeed, much of the oil-centred data has been released by oil companies.

Although some of this new material has been included in undergraduate and postgraduate courses, the rate of absorption in some geology departments in Britain has not been as great as might have been expected, bearing in mind that about two-thirds of students who graduated from our universities and polytechnics in geology and geophysics in 1982, and who obtained geological jobs *sensu stricto*, found them with the oil and service companies; and that we are one of the world's major oil-producing nations. Among other things, this may well be connected with the absence of a suitable and reasonably priced text.

To deal adequately with petroleum geology for the purposes of student instruction and to make some reasonable connexion with the current state of the industrial art would probably require at least three substantial volumes. So it is difficult to see where the market will lie for a broadly-based textbook such as Professor Chapman's, a successor to his *Petroleum Geology: a concise study* (Elsevier, 1973).

Divided into three parts (general; petroleum geology of transgressive sequences; and petroleum geology of regressive sequences), the book is very much in the traditional mould, being dominated, especially in its second and third sections, by details of place and data on oilfields – which in some cases is better illustrated elsewhere. The first section (251 pages) is mainly concerned with presenting principles, its 11 chapters dealing with more than 60 listed major petroleum topics. Consequently, important items such as basins, compaction, diagenesis, origin of oil and gas, generation, migration, accumulation, dissipation and degradation, and well logging are dealt with only briefly or not at all. Well logging and formation evaluation, for example, are allotted only 30 pages (including 14 figures). And topics at present much to the fore like basin-forming mechanisms in petroleum exploration are hardly mentioned.

Chapter 11, on the origin of oil, mentions kerogen and kerogen evolution paths almost fleetingly. And the section on migration does not even mention Momper's now famous "pressure cooker hypothesis" put forward to explain the generation and expulsion of oil through the extremely fine pores of source shales and its movement into carrier beds.

Arthur Whiteman

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Planetary systems

The Solar System
by Barrie W. Jones
Pergamon, £24.25 and £11.75
ISBN 0 08 026496 4 and 026495 6

The greatest problem facing writers of texts on planetary science is the need to decide where to draw the boundaries of the subject. In *The Solar System*, Barrie Jones has drawn the boundaries wide. He includes more material than any comparable book on topics such as the origin of planetary systems, the early history of the planets during the period when their interiors were becoming differentiated and they were acquiring their atmospheres, and the processes which lead to the destruction of stars and their companion planets.

In the main, the layout of the book is conventional. A chapter is devoted to each of the planets with its attendant satellites, though, as you might expect, the Earth and Moon are dealt with separately. By contrast four chapters are devoted to processes rather than objects: the impact cratering process, the formation of planetary ring systems, the acquisition of volatiles by the terrestrial planets, and the origin and end of planetary systems. The minor bodies of the solar system (comets, asteroids and meteoroids) are combined with the section on Pluto, quite appropriately now that Pluto is being downgraded in most people's opinion from planetary status to that of a large asteroid or, possibly, an escaped satellite of Neptune or Uranus.

For a book that claims to be an introduction, the depth of coverage, albeit without using much mathematics, of basic physical and chemical processes is impressive. Furthermore, the style of presentation is authoritative without being didactic. In a manner usually associated with productions of the Open University (the author is a staff member), multiple opinions and arguments are generally presented in a balanced manner, and the reader is given guidance on how to judge the relative merits of the contending points of view.

In only one area did I feel that the author had fallen short of providing an adequate list of ingredients for the discussion, and this was in relation to the origin of the material infilling the lunar *mare* basins, commonly taken to be basaltic lava produced in high-effusion rate volcanic eruptions. Jones properly draws attention to the care which must be exercised in distinguishing between proof and inference in identifying the nature of this material, and gives a commendably constructive discussion of the main alternative hypothesis, that the infill consists of a mixture of impact-generated rocks and dust accreted by the Moon over most of its history. However, I would have felt much happier with this section if I had seen mention of such features as the sinuous rille channels, the regional dark-mantle deposits and the remolded-sensed colour boundaries seen in most of the *mare* basins. Although these features do not uniquely identify the *mare* infill as volcanic, they add some important factors to the discussion.

I have one other, general, criticism of the overall balance of the contents. The large Galilean satellites of Jupiter – Io, Europa, Ganymede and Callisto – deserve fuller treatment than they are given. Analysis of data from the Voyager missions has enabled us to build up a more extensive picture of the nature of the surface features and the processes that have shaped them than is implied by Jones, particularly when compared with the space devoted to the satellites of Saturn.

In general, however, this work is a most useful addition to the growing list of texts providing a readily-accessible digest of the era of planetary exploration.

Lionel Wilson

Lionel Wilson is lecturer in environmental sciences at the University of Lancaster.

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BOOKS
ECONOMICS

Rescue action

Industrial Crisis: a comparative study of the state and industry
edited by Kenneth Dyson and Stephen Wilks
Martin Robertson, £17.50
ISBN 0 85520 543 1

How do advanced market societies react to the problems of the decline and collapse of large business corporations? The claim of this book is that "while there may be no such thing as a 'typical' industrial crisis, there are typical national reactions to crises". Separate chapters on each of six countries attempt to identify these national responses.

The American response is characterized by financial guarantees rather than subsidies or nationalization. West Germany attempts to cure whole sectors of the economy, with a preference for crisis cartels, rather than focus on individual firms. In Britain a private sector solution is preferred, whereas French policy is a mélange of protectionism and selective (state) entrepreneurship. The Italians are the most inventive with respect to rescue instruments, with a public finance agency, credit institutes and commissariat administration as alternatives to the traditional state take-over. In Sweden, six of the seven major rescue operations involved public ownership.

Yet despite these differences in emphasis, one is struck by the similarities. There are not many solutions for which parallels cannot be found in most other countries. Everywhere the response is "reactive" and ad hoc. A crisis is a crisis. And everywhere, it seems, the ultimate motive is the same, despite the principled rhetoric which accompanies the rescue. As in Sweden, "although the rationale for government intervention was described in public as a contribution to structural modernization, the underlying motive remained employment. Conditions were seldom attached to public aid for structural modernization."

Surprisingly, perhaps, this theme is not emphasized. The authors are all professors and lecturers in politics. They are not enthusiastic about the "economics of politics" or public choice arguments, which tend "to down-play political processes and to ignore the structured mediation of institutions." It is upon the latter phenomena that the authors focus.

Some economists might feel that the market is unfairly blamed for precipitating (rather than identifying) industrial crises; that the waste of resources lies not so much in the lack of use of existing plant and skills as in the earlier misinvestment; and that the economic case for government rescue is taken for granted. But these are minor cavils at the opening pages. As a political analysis, the book seeks to explain rather than replace economic analysis.

The case studies are well written and informative. The introductory and concluding chapters are thought-provoking but not easy reading for the non-student of politics. The latter may wonder whether the whole is greater than the sum of the parts, as the general insights have been obscured. However, the editors are to be complimented on the importance and originality of their theme, the harmonization of style and the organization of material.

The editors hanker after concerted, effective crisis management, which would require a transformation of industrial culture. They shy away from any simply normative approach, and their stance is sometimes ambiguous. We are, for example, is one to make of the concluding two sentences? "It would prove easier to deal with such crises [to manage industrial crises effectively] by a redefinition of the crisis, 'good' crisis management to anticipate the priorities of 'the new age'." This adaptation to "the new period" would be speeded if collective memory and a sense of guilt and responsibility spread to industrial management and undermined confidence in the vitality and resilience of the traditional values of industrial society.

S. C. Littlechild

S. C. Littlechild is professor of economics at the University of Birmingham.

Import duty

Depression and Protectionism: Britain between the wars
by Forrest Capie
Allen & Unwin, £15.00
ISBN 0 04 330338 2

The abandonment of free trade by Britain in 1932 was seen at the time as an event of major significance: the Chancellor of the Exchequer, Neville Chamberlain, felt that the legislation would later be viewed "as one of the landmarks in the strange and eventful history of our race". Dr Capie describes and analyses the economic impact of Britain's return to protection during the 1930s. He deals only with the industrial tariff and concentrates upon domestic events; in other words, the effects of retaliation against the British measures are set aside though, of course, the British tariff itself can be seen as retaliatory action.

The origins of the protective measures were twofold. First, they can be seen as the culmination of a trend evident from the late nineteenth century when British business interests became convinced that a policy which they saw as unilateral free trade was becoming progressively disadvantageous to them. The author describes the growth of protectionist sentiment clearly and is able to link, in the second half of his study, those business interests which lobbied persistently for the tariff with its effects upon economic recovery. Some writers place greater emphasis upon the more immediate and second source of protection, which was a hurried response by an embattled government to abnormal imports and dumping during a worsening economic crisis. Dr Capie's calculations show that the government's reaction was to events which were more imaginary than real.

Having embraced the tariff, now came the problem of the level of protection and concern about the political pressure which would be exerted by powerful groups. Here, as Capie demonstrates, the Import Duties Advisory Committee proved to be an invaluable buffer between the state and vested interests. The most stimulating and original part of this book, however, is the section in which the author attempts to quantify the degree of protection actually given to British industry. By calculating the effective rate of protection, which shows by how much the value added in an industry can exceed the value added in the absence of protection, instead of concentrating upon the nominal tariff, Dr Capie is able to come to some interesting conclusions.

The advantage of using the effective rate as a measure of protection rather than the nominal tariff can be seen if we look at the building industry, which played a crucial role in the economic recovery in the thirties. Housing, of course, cannot be protected, but the industry consumed a large quantity of imports which had to mount the tariff wall. As a result, construction had a negative rate of protection, a factor which makes its thirties performances even more impressive. Furthermore, the effective rate of protection for the iron and steel industry, another major contributor to economic recovery, was small. The tariff, therefore, had little to offer the British industry.

Dr Capie examines other aspects of the tariff debate: imperial preference, Britain's new bargaining position in international trade; the devaluation of 1931. He suggests, I think correctly, that the impact of all these was small. The author, in a book which provides refreshing insight into the period, has grappled with issues about which most other historians have been particularly vague and has done so with a high degree of success. Dr Capie's clear, though terse, style combines traditional methods of analysis with that of the new economic history, but he is always ready, however, to remind the reader that both approaches contain pitfalls which can trap the unwary.

Peter Fearon

Peter Fearon is senior lecturer in the department of economic and social history at the University of Liverpool.

Public goods

Public Sector Economics
by Robert Millward, David Parker, Leslie Rosenthal, M. T. Sumner and Neville Topham
Longman, £8.95
ISBN 0 582 29566 1

The intention of the new Longman "Surveys in Economics" series is to supplement textbooks with surveys of areas which are highly relevant to an undergraduate's education but where the bulk of the professional literature is inaccessible to students. *Public Sector Economics* selects four areas where significant developments have taken place over the past two decades.

M. T. Sumner discusses the incentive effects of taxation concentrating on the influence of taxation on business decisions and household behaviour. He reviews the literature bearing on the effects of business taxation on the firm's decision about its output, inputs, location and sources of finance and assesses the sensitivity of the results to changes in the firm's objectives. While the appropriate framework in which to analyse the welfare effects of taxation on household behaviour is an optimal tax model, Sumner's analysis of the theoretical and empirical work on the supply of effort highlights the need for further research before optimal income tax structures could be implemented in the UK. On sales taxation he concludes that policy depends on a much broader set of issues than are currently represented in the optimal commodity tax model.

Subsidies to the personal sector are analysed by Leslie Rosenthal who argues that subsidies cannot be treated merely as negative taxes as their role and impact involve considerations which are unique in public policy evaluation. Rosenthal is initially concerned with providing a sound theoretical basis for the use of subsidies as a means of redistribution. Despite the presumed superiority of cash transfers he shows that when donor and beneficiary are considered jointly a good-specific externalities case can be made for subsidy.

These theoretical developments are followed by a review of the literature on food and housing subsidies to illustrate the conceptual and empirical problems that arise with subsidies.

The rapid growth in the literature on fiscal federalism or local government economics is surveyed by Neville Topham. The old and new views on the property tax is analysed but the main issues, according to Topham, are the extent to which a property tax is capitalized into price and how efficiency in supplying local public goods is affected by the system of finance. He analyses the theoretical and empirical work on grants in aid to local governments and explores the distributional implications.

Public enterprise literature in the seventies reflects the growing concern in the behaviour and performance of public ownership. Robert Millward and David Parker evaluate the objectives and relative behaviour and relative efficiency of public and private enterprise. Since empirical comparisons of efficiency are difficult unless public and private firms are providing the same type of good or service, most of the empirical work surveyed relates to countries other than the UK or to private and public provision over time.

This volume will provide an excellent supplement to the numerous textbooks available. The major issues are explained and the significance of theoretical and empirical contributions are assessed at a level which within the scope of able undergraduates with a sound quantitative background. Each of the four sections is presented as a self-contained piece of work.

J. F. Bradley

J. F. Bradley is lecturer in economics at the Queen's University, Belfast.

BOOKS
ECONOMICS

Changing fortunes

Industry, Unions and Government: twenty-one years of NEDC
by Keith Middlemas
Macmillan, £17.50
ISBN 0 333 35121 5

The research work of the National Economic Development Office has covered some of the short-run macroeconomic problems of the British economy but its major focus has been the longer-term structural features of industry, especially manufacturing. The council itself, together with the important channels of communication in the form of the Economic Development and Sectoral Working Party committees, have acted as tripartite forums of discussion. This book chronicles the ups and downs of NEDC's fortunes.

Born in an era when government and the central offices of the unions and employers were looking increasingly for a setting where the incipient signs of stagflation could be discussed on a tripartite basis, the NEDC's first work was on the obstacles to growth. This was used in the National Plan of the 1960s when NEDC became overshadowed by the Department of Economic Affairs and when in any event it had been practically castrated by Treasury insistence that the word devaluation never be used in public. It survived the prunings of the early Heath years and undertook an industrial review slanted towards EEC entry. Then from the mid 1970s, two key Ministers Tony Benn and Michael Foot were strongly linked to TUC ideas and NEDC's tripartite potential in the era of planning agreements was never realized. Nor has it been allowed to flourish during the last five-year period of strong anti-union ministerial views. Throughout however detailed industrial studies continued and the council has been ever available as a forum for those wishing to use it.

This book is not an analysis of NEDC's views about the British economy though they do fit in and out of the narrative. The most explicit statement, at least as regards the Office view by the 1980s, is that Britain's relative decline is due to human obstacles to improving industrial productivity, a tendency to suck in imports and the resistance of wage inflation to unemployment levels. This perception is not analysed in any depth. Nor is there any assessment of the claim that NEDC has refuted the liberal view that business self-regulation and unregulated competition are enough for good economic performance. Rather what the book does quite well is set the stage for analysing what is NEDC. Keith Middlemas's skills as a historian are well used in researching the narrative and those who have worked in or near to NEDC will find much of interest. He claims in the introduction that "a narrative can suggest that without [NEDC] things might have been otherwise, or worse". But he is somewhat at a loss really to pin this down. In his own words NEDC is not simply a forum. Moreover the content of its deliberations has changed with the various political administrations. Part of the problem is that the book is a history of NEDC's 21 years relying heavily on detailed study of its records and interviews with staff, with meritably a sympathetic picture emerging. There are several assertions, not necessarily incorrect but largely unsupported, that NEDC carries weight, acts as a guardian (like the Church of England, the Chiefs of Staff) of the public interest in commerce and industry and has had a seminal influence in several quarters.

The main difficulty however is that the book is restricted to setting the stage, to describing NEDC's fortunes so that some of the analytical threads have not been pursued as far as one would like. NEDC's life spans a period of relative decline for Britain and Middlemas sees tripartism as a long established and essentially British tradition. Certainly in other spheres, like the regulation of safety and health, the British solution was neither authoritarian nor legalistic but rather based on the proposition that problem could be dealt with as the concept sufficient reasonable men were prepared to discuss causes and seek remedies. I suspect that students of contemporary history have a lot to teach the economist about the importance of this tradition if only we could develop a common language. It would be interesting for example to see how Middlemas might view NEDC in the light of the analysis by the American economist Mancur Olson, in *The Rise and Decline of Nations* (Yale University Press, 1982). Collective action is difficult because of the free rider problem and Olson therefore sees the development of institutions to represent group interests as being more likely in politically stable countries. Moreover collective action is usually damaging to economic growth since sectoral groups (trade unions, for examples) are correct to build up that national groupings: hence the Olson explanation of Britain's economic decline. In fact you can turn Olson's argument around and argue that it is only in the politically stable countries that nationally organized groups are possible. Either way NEDC is of special interest in this light as is Middlemas's characterization of it as a guardian of the public interest.

The issues one would therefore like to have seen pursued include an explanation of why NEDC's development as a tripartite forum was weak; to what extent is the progress of institutions like this in different countries a reflection of different political developments; does it in any case represent the national interest, and if the British tradition has declined what does that imply about the future of NEDC?

Robert Millward

Robert Millward is professor of economics at the University of Salford.

Unfair shares

The Economics of Inequality (second edition)
by A. B. Atkinson
Oxford University Press, £15.00 and £5.95
ISBN 0 19 877209 2 and 8772084 '

It is a good deal easier to make measurements than to know precisely what one is measuring. If you did not appreciate the truth of that observation, you certainly will after reading Professor Atkinson's *Economics of Inequality*.

My comment is intended as high praise not criticism. It is all too easy to bandy statistics on the distributions of income and wealth in support of one's own prejudices. But the evidence on the subject is both extensive and patchy. One must understand all the inadequacies of the data, the assumptions that lie behind them and the representativeness of samples if one is not to jump to unjustified conclusions. For, frustrating though it is, we know far too little about the facts of inequality to be able to state unequivocally what precise share of total income accrues to the top x per cent of the population, for example, or whether inheritance has been on the increase or decrease.

The great strength of Tony Atkinson's masterly survey is that it provides an appreciation of all the major problems involved in interpreting the literature, ending up, as it certainly should, with such conclusions as that the proportion of the population living in poverty is something between 6 and 23 per cent, or that the extent to which trade unionism can explain wage differences probably lies between zero and 25 per cent.

The new edition appears eight years after the first. It follows the same structure as its predecessor, dealing in order with conceptual problems, evidence on the distributions of income and wealth, factor shares, poverty and policies for income maintenance. The main change is simply the result of the tremendous amount of new material that has appeared since 1975, not the least important being due to the Royal Commission on the Distribution of Income and Wealth. Of the 700 odd references at the end of the book, about half post-date the first edition. Even they are, of course, only a selection, but it is difficult to fault either Atkinson's choice or his skilful condensation of the mass. He is fortunate, too, in possessing the rare talent of being able to communicate complex ideas with great clarity while maintaining readability and touches of humour.

Although the book deals with theoretical issues, the emphasis is on quantification, both of the extent of inequality and of its causes. A person's income depends on a host of factors, including age, sex, education and training, physical and mental ability, family background, occupation, industry and trade union activity. It is absolutely essential to know something about these if one wishes to take a view on what, if anything, should be done to try to change the distribution.

For example, some imagines that most people would be less concerned with inequality arising in differences in hours worked than from those attributable to sex.

Such reservations as I have about the book relate to its coverage and organization. Although the pages are tightly packed I should very much have liked to see some space devoted to the incentive effects of redistribution, which often enter policy discussions. If the book were thereby made a little longer, so be it. An alternative suggestion would be to condense some of the sections on the USA. They are included because the author wants to deal with "western advanced countries" and because American material can plug gaps (for example, that of earnings differences between identical and fraternal twins). However, the distributions of income and wealth result from social and institutional factors, which can differ profoundly from country to country and the relevance of some non-British evidence needs careful consideration if it is not to mislead. Perhaps a less ambitious target, focused on the UK, with other evidence treated more separately and briefly, might be an improvement (though it would probably not appeal to the publishers).

A final comment: I think it could be helpful if short and long-run considerations were distinguished more consistently. The tables in the book cover extremely different time periods and conclusions can be highly sensitive to those chosen. The determinants of inequality can differ significantly over time and it is sensible to keep well aware of this. For example, Atkinson refers to a survey result that fringe benefits amounted to 37 per cent of cash salary for general managers in 1978. He omits to mention, however, that they were only 16 per cent in 1974 – the large rise being almost certainly attributable, at least in part, to government incomes policies pursued over much of the period.

These reservations are slight in comparison with the tremendous achievement of the book as a whole. I have not the least doubt that it will continue to be used as a standard work – until the next edition.

Colin Harbury

Colin Harbury is professor of economics at the City University.

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BOOKS

ECONOMICS

Model methods

Unemployment and Inflation in the UK: an introduction to macroeconomics
by D. W. Challen, A. J. Hagger and P. Hardwick
Longman, £9.95
ISBN 0 582 29618 8

During the past fifteen years the UK economy has been plagued by a dual problem of inflation and unemployment. This insidious combination of economic ills precipitated a crisis in economic theory with the result that economics today is more controversial than at any time since the 1930s. In particular the postwar consensus in macroeconomics based on the "orthodox Keynesian" model crumbled under the combined pressure of a monetarist counter-revolution in economic theory and events which appeared to be inconsistent with the predictions of standard Keynesian models. By the mid 1970s the rehabilitation of the quantity theory of money was almost complete, a fundamental shift in macroeconomic theory and policy had occured.

But the magnitude and length of the current recession has betrayed the optimistic prophecies of the more enthusiastic members of the monetarist camp. Indeed few economists, if any, would have anticipated ten years ago that unemployment levels in excess of 10 per cent would be necessary to scale down the rate of inflation. In writing *Unemployment and Inflation* Challen, Hagger, and Hardwick have therefore concentrated their attention on the dominant public policy issue of the 1980s.

Although this is essentially an introductory macroeconomics textbook the problems of inflation and unemployment provide a theme occupying centre stage throughout. Since these complex problems cannot be understood in an intellectually satisfactory and professional way without recourse to a model of the macroeconomy, the book carefully builds up a network of relationships necessary to make sense of the current malaise together with an appreciation of the possible remedies. To this end the authors make extensive use of the IS/LM framework which forms the basic model upon which a succession of increasingly complex "systems" are erected. The approach is innovative with some particularly useful flowcharts and diagrams summarizing the essential features of each system. To their credit the authors have shown just how much potential there is in extended versions of the IS/LM model for discussing inflation and unemployment within the context of a small open economy.

In using the method of short-run comparative statics within an equilibrium framework the authors also succeed in introducing the student to complex relationships without recourse to advanced mathematics except in optional appendices. However, those students who lack confidence in extensive algebraic and diagrammatic manipulation will find many chapters in the book incomprehensible. This problem tends to be compounded by a style which in places does more to impede communication than enhance it.

My own experience of teaching the IS/LM model suggests that most first year undergraduates have immense difficulty in grasping even the fundamentals of the basic model, never mind the sophisticated extensions developed here. Manipulating a model is one thing, understanding what is behind the relationships is something quite different. For these reasons the book is unlikely to be suitable for students coming to macroeconomics for the first time, although it will be rewarding for those already familiar with the basic Keynesian income-expenditure model.

As far as economic policy is concerned the authors successfully highlight the dilemma facing any future government wishing to engineer a sustained non-inflationary recovery in economic activity. Any gains in employment are likely to be offset by an acceleration of inflation. The authors adopt a neo-Keynesian approach to the resolution of this conflict by advocating the use of prices and incomes policy combined with measures to reduce the natural rate of unemployment. Remarkably there is little discussion of the significant theoretical developments made in the past decade by the "new classical school" of monetarists and their extreme non-Keynesian policy conclusions. As a result the book lacks balance and does not satisfactorily convey to the reader the extremely controversial state of modern macroeconomics. In reality the proper conduct of macroeconomic policy is wide open for discussion despite the present governments claim to the contrary.

Brian Snowdon

Brian Snowdon is senior lecturer in economics at Newcastle Polytechnic.

No simple solution

Macroeconomics: theory and policy in the UK
by David Greenaway and G. K. Shaw
Martin Robertson, £25.00 and £9.95
ISBN 0 85520 533 4 and 534 2
Macroeconomics and the British Economy
by Roger Backhouse
Martin Robertson, £19.50 and £8.50
ISBN 0 85520 680 2 and 681 0

In the last few years, economic theory has been in a state of flux. Many of the traditional ideas have come under attack from a variety of directions, both on theoretical and empirical grounds. Macroeconomics has not escaped the general turmoil. Indeed much of the conventional theory has been subjected to incisive criticism from devotees of constrained equilibrium, rational expectations, and contract theory among others; and empirical investigations of the British economy have further emphasized the shortcomings of conventional models and led to the development of new approaches to macroeconomic theory and its econometric testing.

Backhouse catches some of the flavour of this controversy in his book, but unfortunately Greenaway and Shaw's competent but rather dull book hardly does so. It would be easy to believe that the latter had been written in the late 1960s, so old-fashioned are its approach and style, as an outline of the contents will show.

Macroeconomics: theory and policy in the UK is divided into three parts. The first covers the principal variables occurring in the familiar IS/LM model, together with some discussion of the labour market needed for the aggregate supply curve. The second covers the classical/Keynesian and monetarist economic systems, also extending the analysis to treat the government's budget constraint, inflation and the balance of payments. Surprisingly, in all these 15 chapters there is almost no mention of UK data or institutional arrangements except in the two on the demand for, and supply of money. It is partly for this reason, I suspect, that much of the theory feels quite remote from present-day realities, a feeling reinforced by the chapters on the consumption and investment functions in which attention is confined to approaches developed in the 1950s. (We do not learn anything about the adequacy of these approaches for explaining consumption and investment demand in the UK, and there are only passing hints that policy variables themselves might affect demand. However, it must be added that the chapters on the government budget constraint and inflation are unusually good for an intermediate level text.

Part three on macroeconomic policy has much more to say about the UK. Following a superficial account of alternative approaches to macroeconomic policy (in which the authors seem to believe that a symmetric welfare function must be quadratic), it is much better on inflation, unemployment and balance of payments policy. Even here, however, strikingly little use is made of the theoretical framework assembled so laboriously in earlier chapters. Finally, the book fizzles out with a disappointingly thin chapter on policies for economic growth.

Backhouse, in *Macroeconomics and the British Economy*, only devotes a single chapter to reviewing theory, covering IS/LM and aggregate supply and demand. He has little to say about the components of aggregate demand. In later chapters he concentrates on policy issues, in each case combining relevant empirical material together with theoretical analysis in a very effective way. The issues tackled are very much as one would expect in such a book: conventional topics such as the balance of payments and the exchange rate, inflation and unemployment, aggregate supply and the natural rate of unemployment, and so on. Although the theory is frequently eclectic, the result is a book which is generally stimulating to read.

Both books are critical of many aspects of the conduct of British macroeconomic policy, but they appear to agree that our most fundamental problems cannot be located within the province of macroeconomics. Thus: "The explanation of the poor performance of the UK economy has to be sought on the supply, rather than the demand, side of the economy" says Backhouse. Greenaway and Shaw are rather more sceptical about the prospects for supply-side economics to remedy all our problems and conclude that there is little agreement "apart from the general consensus that growth is complex and no single simple solution exists".

In the face of such discouraging views, it is only natural to wonder why we all spend as much time and effort as we do in teaching and learning macroeconomics.

Paul Hare

Paul Hare is reader in economics at the University of Stirling.

Income distribution and economic development:

An analytical survey, by J. Lecaillon, F. Paukert, C. Morrisson and D. Germidis

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BOOKS

ECONOMICS

Settling on the right mix

In Defence of the Mixed Economy
by Andrew Shonfield
edited by Zuzanna Shonfield
Oxford University Press, £15.00
ISBN 0 19 2153595

As its title announces, this book by the late Andrew Shonfield is a vindication of the partnership between the private and public sectors. As such, it is a very welcome antidote to the mass of writings in favour of free and unfettered markets that is swamping the economics literature.

Rather than aping US fashions, Shonfield underlines the enormous institutional diversity of the western economies. Hence, his preferred outcome is much more complex than that implied by today's catchphrases (deregulation, denationalization, reduction of public expenditure), and he emphasizes the varied mechanisms that make for social consensus in some countries but not in others.

There are three parts to the book. The first brings together a number of very perceptive observations on events between the mid-1970s and the early 1980s. For a firm believer in mixed economies this must have been a trying period as many of the earlier trends in favour of greater public intervention were being questioned. While understanding the importance of some of these questions, Shonfield also rightly doubted the permanence of many of the new trends and exposed the numerous contradictions of the anti-government school.

The second part is a long but excellent digression on Japan's industrial structure, labour market and government action. Shonfield identifies the pattern of interlocking shareholding in major Japanese corporations and the "outstandingly flexible" labour market as elements facilitating successful economic management. He also saw, however, that greater international integration and a shift in industrial structure towards smaller firms were leading to a loosening of the control powers of the government.

The third part is the most interesting but also the least convincing. Here Shonfield states his case for what he calls the "corporatist" solution to the problems of the 1980s. The exact meaning of corporatism is, however, unclear. Part of the problem may lie in the posthumous nature of the book, which has been edited on the basis of unfinished drafts. More importantly, however, corporatism to Shonfield seems to be many different things – Japan's network of business-government contacts, Austria's neo-Keynesian demand management, Germany's *Mitbestimmung* at the factory level, Scandinavia's tripartite incomes policies. Yet for a continental reader corporatism conjures up very different visions – Salo and Vichy in the past, French lorry-drivers and peasants or Italian doctors and airline pilots now.

Also open to doubt is Shonfield's plea for indicative planning. While government intervention is here to stay, indicative planning has long been dead. It was used by the French in the early 1950s and, possibly, by the Japanese in the early 1960s, but its applications in those two countries were ineffectual thereafter and failed elsewhere in Europe (witness Britain's 1965 National Economic Plan or Italy's 1967 National Economic Programme). For economics, at or close to, the frontiers of technological progress, in which the diversification of demand, production and comparative advantage is extremely rapid, sectoral projections are nowadays irrelevant.

At times, Shonfield seems to argue that indicative planning is no more than government help for longer-term investment in some crucial sectors while corporatism is really only a successful incomes policy. These are much more acceptable propositions. Given the long lead-times, the large risks and the strategic nature of many of today's high technology industries, government involvement is almost inevitable. Similarly, given the great difficulties of reconciling full employment and low inflation in the absence of Japanese-style labour markets, incomes policies may be the only solution left for Europe's mixed economies.

The question then is how countries such as Britain, France and Italy can achieve the social consensus typical of Austria and Scandinavia. Did a pre-existing consensus forge the centralized institutions which these countries now have, or did the creation of institutions generate the consensus? Should the latter be true, institutional reforms may bring success. If, however, social consensus is a function not only of institutions but also of history, culture and an environment of rapid growth, its reproduction elsewhere may not be feasible. Corporatism in some countries is then Shonfield's "systematic dialogue between interest groups". In others, however, it is no more than the aggressive manifestation of sectoral interests – a "riot of pluralism".

Andrea Boltho

Mr Boltho is a fellow of Magdalen College, Oxford.

Historical settings

The Rise of the Corporate Economy, second edition
by Leslie Hannah
Methuen, £11.95 and £5.95
ISBN 0 416 34850 5 and 34860 2

For those who recognize the importance of the historical setting of economic phenomena, this book, a revision of one which appeared in 1976, is full of interest. Successive chapters recount the development of British industry, from the late Victorian age through to the merger boom of the 1960s, with its consequences for industrial reorganization in the 1970s.

Dr Hannah's account covers the "rationalization" (a loaded term indeed) and merger boom of the 1920s, the associated managerial problems raised by the very large firm, the accompanying and ensuing cartelization, and the period of relative quiescence in increases in concentration from the 1930s to the 1950s. Dr Hannah's focus is initially upon aggregate concentration, but he frequently introduces considerations of market concentration in the detailed discussion.

His basic thesis is that there has been a long-run trend towards greater concentration at both firm and (more surprisingly, and with not a lot of strong supporting evidence) at plant level, resulting in the emergence of a corporate economy. No clear welfare conclusions are drawn though the reader emerges with the feeling that Dr Hannah believes the process to have been due largely to technical and financial economies of scale and that the resulting managerial problems can be overcome.

The result is a book which is both fascinating and frustrating. It is fascinating because of the subject matter and the detail with which it is treated; it is frustrating because the author, perhaps understandably in view of the complexity of the problem, is reluctant to come to clear conclusions and remains agnostic on almost all the important issues. Often, debatable statements in the text are contradicted (or at least very heavily qualified) in the footnotes.

There are, inevitably, a number of points on which other writers may differ from Dr Hannah. Some might place a different emphasis on the importance of scale economies *vis à vis* cartels: the full importance of the cartel movement is not discussed until late in the book, even though it received a substantial impetus during both world wars. Again other authors may (indeed they do) dispute the size of the role ascribed to mergers by Dr Hannah in increasing concentration; and, given the size of optimal scale in relation to the total UK market for many commodities, they might not accept that scale economies alone have been very significant in increasing concentration.

Still even those who do not agree on these matters will still find a wealth of interesting material in the book, especially industrial detail. Moreover, the agnosticism of the author, though at times frustrating, can be considered a virtue: if there are no justifiable conclusions, why pretend they exist? Better a balanced and sensible approach than sweeping Galbraithian assertions. The empiricism in this book is not casual; it remains an invaluable quarry.

D. P. O'Brien

D. P. O'Brien is professor of economics at the University of Durham.

Monetary bias

International Economics
by David Gowland
Croom Helm, £14.95 and £6.95
ISBN 0 7099 1135 1 and 1138 6

Traditionally textbooks on international economics are relatively lengthy tomes. This is almost inevitable since international trade and international monetary theory and policy are in many respects distinct branches of economics, and it is extremely difficult to provide an adequate foundation in both without producing a volume of considerable length.

The task of textbook writers in this field is not eased by the fact that a great many important developments have occurred over the past decade or so. For example, interest in trade in differentiated goods, the political economy of protectionism and exchange rate overshooting (to name but a few) has spawned a formidable literature. In the face of these constraints David Gowland, a well-known textbook writer on monetary economics, sets himself the task of producing a text which is concise, incorporates recent developments and is suitable for undergraduate students of economics.

Overall the book is certainly digestible and in general should hold no horrors for the average undergraduate. The principal shortcoming of the text is that it is heavily weighted to the monetary side. Questions of balance are very much a matter of personal choice and indeed some courses do have a distinct monetary bias. Nevertheless, a solid grounding in trade theory and policy is invariably required in any programme of study in international economics. In general the trade chapters are too terse and sketchy and provide only a superficial treatment of several important topics. For example, the "core" model in trade theory, (from the standpoint of the vast majority of instructors), is the Heckscher-Ohlin (factor endowment model). This is covered in threequarters of a page. Such a coverage cannot provide the student with any more than a nodding acquaintance of what is (rightly or wrongly) widely regarded as the foundation to international trade theory as well as the theory of commercial policy.

In addition, other important trade topics are either omitted (for example the General Agreement on Tariffs and Trade system); or dismissed summarily (as for example with the extraordinary comments on scale economies on page 23 which ignore completely the enormous theoretical and empirical literature of the last six or seven years).

By contrast, balance of payments analysis and international finance receive a much more careful and thorough treatment. The author shows a much keener awareness of and interest in developments in this field and the only topic of any note which might have received further treatment is exchange rate overshooting, although one could argue with some justification that it has no place in a book of this level. Overall, a reasonably balanced blend of theory, policy evaluation and institutional analysis is achieved. The coverage of monetary issues is comprehensive and clearly benefits from enjoying double the amount of space devoted to the trade chapters.

David Greenaway

David Greenaway is senior lecturer in economics at the University of Buckingham.

Basil Blackwell

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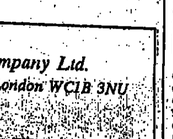

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(064)

BOOKS
ECONOMICS

Cautionary tales

Reality and Rhetoric: studies in the economics of development
by P. T. Bauer
Weidenfeld & Nicolson, £11.95
ISBN 0 297 78335 1

Lord Bauer

When one opens a book by Lord Bauer, one expects to be surprised, shocked, provoked and illuminated. This collection of papers (mostly published for the first time) does not disappoint being full of vintage Bauer, distilled over many years of application in the rubber plantations of Malaya and the trade routes of West Africa. Ten years thus engaged form an admirable apprenticeship for an economist (it is a cautionary thought that many begin teaching before the ink is dry on their finals papers), imparting some immunity from the fancies of academic economics. His *bêtes noires* include planning, aid, development economics; his quarries Gunnar Myrdal, Ragnar Nurkse, Pope Paul VI and Paul Baran.

The first and last chapters deal with the state of (mainly development) economics. Keynes was wrong when he claimed power for economists' ideas. "The practice of governments of appointing economists as advisers may have helped to propagate the notion . . . In fact, particular advisers are often chosen because governments rightly believe that their advice would accord with what they wish to do in any case." But the reader must go carefully for fear of applauding some stricture that is then turned on one of his own cherished ideas. Chapter one, "Remembrance of Studies Past", reminds me painfully of the illusions which I shared twenty or thirty years ago: the vicious circle of poverty and stagnation, that was to be broken by the mobilization of the people and national resources; the great leap that would result from the ending of imperial exploitation; the potential of comprehensive planning.

I share Bauer's scepticism about growth models – the comparative advantages of balanced or unbalanced growth were without interest for planning departments because they had no practical application. Bauer, however, rejects "comprehensive planning" in general. "It did not augment resources but only diverted them from other public and private uses. It reinforced the authoritarian tradition prevailing in many ldcs, and it also divorced output from consumer demand and restricted people's range of choice." I know that many plans miscarried, but this was partly due to the oil price upheaval and the perverse behaviour of the unplanned capitalist world.

In Chapter five, "Ecclesiastical Economics: Envy Legitimized", attention is turned to the encyclicals of Pope Paul dealing with the responsibilities of rich to poor countries. "Inequality means injustice . . . God intends the earth and all that it contains for the use of every human being and people . . . The world is given to all, and not only to the rich." I am not sure whether the argument is that this is a misrepresentation of divine intentions, and the world is indeed designed mainly for the enjoyment of the rich. Or does this is the way it has turned out. I think Bauer objects to it being politicized, especially by a spiritual force because it excites the envy of the poor. This is the same message that Mrs Thatcher, writer of popular education works, conveyed 150 years ago: a most important aim of political economy was to teach the lower classes that the rich are their friends, not their foes – "that to love and assist each other in all the concerns of life contributes to the happiness of both classes . . ." That may assuage the envy of the poor, but it also promotes the complacency of the rich, and I fancy that was this that the Holy Father was trying to disturb.

Many of Bauer's criticisms of the business are well taken, for it is paradoxical to give aid to poor countries whose wealthy classes invest property in Europe and North America. Here, again, he may find support in Mrs Marcet: "giving encourages beggars, and yet they are not let off. If you double the quantity of halfpence you double the number of beggars . . ." The most conspicuous misfortunes of the poor countries are those they bring upon themselves on each other: corruption, misappropriation, indifference to suffering, genocide. But it took several centuries of war and revolution to eliminate the worst of these characteristics in European countries (where they are by no means at an end) so, though disappointed, we need not be surprised if little progress seems to have been made in the third world in the thirty years or so since independence.

Bauer's book abounds in material useful for teaching purposes. It is guaranteed to provoke students to raise their voices in praise or blame.

Guy Routh

Dr Routh retired from the University of Sussex in 1981. His new book "Economics: an Alternative Text" will be published next week.

Achieving balance

The Quest for Economic Stabilisation: the IMF and the Third World
edited by Tony Killick
Heinemann Educational, £16.50 and £6.95
ISBN 0 435 84427 X and 84428 8
The IMF and Stabilisation: developing country experiences
edited by Tony Killick
Heinemann Educational, £15.00 and £6.95
ISBN 0 435 84425 3 and 84426 1

By default, the International Monetary Fund (IMF) has become banker to the third world, but by virtue of its charter and outlook it lacks the inclination and imagination to facilitate repayment without often wreaking havoc in the countries concerned.

Wedded to the principles of free enterprise and free trade, it generally eschews selective policies and controls on the supply side to cope with the structural rigidities of developing countries, particularly their dualism – the sharp rift between the characteristics and needs of the agricultural sector on the one hand and the emerging industrial sector on the other. Instead, the tired and worn solution of a uniform and devalued exchange rate; tight monetary ceilings; public expenditure cutbacks, and the relaxation of foreign exchange controls are typically ordered in the (misguided) belief that all balance of payments problems have their origin in distorted relative prices and/or excessive expenditure relative to output.

The Overseas Development Institute has spent three years investigating the sources of payments imbalance, and the relevance and efficacy of IMF stabilisation policies, in a range of developing countries. These two volumes report its findings, and Mr Killick and his team of Mary Sutton, Jennifer Sharpley and Graham Bird have done a judicious job in bringing together and interpreting the evidence. They analyse over thirty IMF programmes supported by upper-tranche credits between 1964 and 1979.

They seem to support the view that excessive monetary demand has been the predominant source of payments imbalance, but find that the IMF policies have been largely ineffectual in rectifying payments difficulties, while at the same time exacerbating inflation. Ineffectiveness is attributed not so much to poor implementation but to a lack of correlation between instruments and targets due partly to exogenous factors and partly to internal supply-side difficulties. In the first volume there are separate chapters on the causes and consequences of payments disequilibrium; the potential of domestic stabilisation measures; balance of payments policy; IMF conditionality and resource use; IMF stabilisation programmes, and the impact of fund programmes. The second volume contains case studies of Peru and Chile in Latin America, Indonesia, Jamaica and Kenya. While the detail is impressive, their quest for objectivity and detachment, and perhaps too close contact with the IMF itself, makes the writing insipid in places, and they do not pursue the logic of their own analysis.

The general question is posed "Is the fund a doctrinaire, inflexible, monetarist, pro-market, anti-socialist, and anti-developmental institution"? Although the authors answer no, there is enough evidence presented to answer yes. Their conclusion is difficult to explain except in terms of diplomatic niceties. To claim that the fund is not anti-socialist is not credible. It is a major bastion of support, as Keynes envisaged, of an international economic system that prefers capitalism to socialism; that supports private investment and disparages public investment, and which favours the free flow of private capital to and from developing countries. And contrary to the impression left by Jennifer Sharpley in her chapter on Jamaica, there can be no doubt that the fund, under American pressure, played a major role in the downfall of Manley's socialist government.

The authors also document quite clearly that the fund has been doctrinaire and inflexible and in general takes a neoclassical cum monetarist view of the world. Indeed, it is on these things which lend them to their main policy proposal for what they call a "real economy approach to balance of payments adjustment", or "adjustment with growth", which would be a more flexible supply-oriented approach with demand management subservient. They continue, however, to place abiding faith in the exchange rate as the means of shifting resources to the traded goods sector, and they invoke the work of Nashashibi on Sudan in support.

In fact, the case of the Sudan illustrates beautifully how fraught with difficulty the approach is, (as a reviewer in league and I show in a forthcoming paper). Apart from the problem of changing relative prices, a single exchange rate does not make theoretical sense in a dual economy. What needs to be recognized above all, however, is that equal growth in less developed and developed countries is not possible without payments deficits in the latter as long as income elasticities between traded goods favour the developed countries. The challenge is not simply shifting resources to the tradable goods sector, but encouraging particular types of tradables. Note is that, contrary to assertion, the supply approach does not require a reduction in consumption to increase savings. It arise. What is important for the balance of payments is that consumption and investment do not rise by as much as output.

Most of the authors' policy proposals, that intervention should be taken made and that performance targets be replaced by policy consensus or reserve indicators, would help to reduce the costs of adjustment and are to be welcomed. It is rightly recognized, however, that the extra duration of adjustment would require more finance. Herein lies the difficulty of the alternative approach under the auspices of the IMF: One is tempted to say that perhaps more poor countries should grasp the nettle and try to go it alone. This option is not discussed.

A. P. Thirlwall

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BOOKS
ECONOMICS

Great issues

A History of the World Economy: international economic relations since 1850
by James Foreman-Peck
Harvester Press, £22.50 and £7.95
ISBN 0 7108 0111 4 and 0 7108 0116 5

In a review of a very different kind of book, Michael Howard recently quoted Jacob Burckhardt as saying that the true use of history was not to make men clever for the next time, but to make them wise for ever. Noble words indeed, but Foreman-Peck's book shows us that in the context of the world economy they are little more than a sick joke.

Not only are we at sixes and sevens over monetarism at the present time, but economic historians cannot even agree over the role of money in the long price fall after 1870 nor its contribution to the depression of the 1930s, though one gathers that even Milton Friedmann has now admitted that that catastrophe had at least a Keynesian flavour. The Americans understand their role in the world economy in 1984 no better than they did in 1920s. Mr Peck has a nice habit of slipping in amusing verses here and there; what about this one?

In Washington Lord Halifax
Once whispered to Lord Keynes
"It's true *they* have the money bags
But *we* have all the brains".

How naive we were after 1945. We lectured with confidence that never again would the home economy be forced to suffer just to keep the external in balance; how easy it would be now the gold standard had gone. Arthur Lewis castigated the British in his *Economic Survey 1919–1939* for looking to their own good in the 1930s and not to that of the world as a whole, as if anyone ever had – but of course we were all going to be good boys.

The book ranges widely, guiding the student through the massive complexities of the author's various themes with immense skill. He sets out the theoretical bases clearly and simply and uses them with great care, refusing to descend into refinements for their own sake. He confides to us his own opinion of the numerous controversies as he should and rarely fails into the error of abandoning his own flow of argument and narrative in favour of the easy but tedious road of "A says this but B says that" and so on.

The years from 1850 to 1875 are rightly seen as the classic era when world trade was dominated by Britain, the Bank of England was the obvious lender of last resort, the gold discoveries were allowing others gradually to join the gold standard and prices were rising gently – required reading for Mr Lawson, since at least one lesson from the last century is that nil inflation is not a good thing.

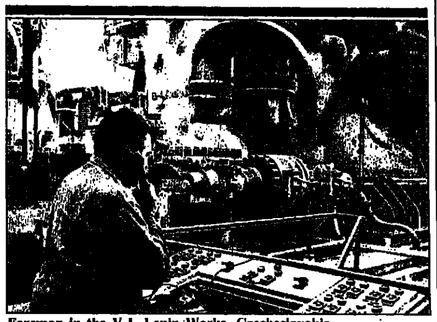
After 1870 the world became less simple, the verities of free trade less obvious. Palmerston may have sent more gunboats but now trade and investment truly became major factors of foreign policy. Yet still the openness of the world economy allowed to 1914 an unprecedented movement of people – not only across the Atlantic, but of Russians to Siberia, Chinese and Indians to tropical countries – and with them went other factors of production too. I have only one important quarrel: Foreman-Peck argues that the working of the old gold standard did not after all depend upon a tranquil world where change came only slowly, but surely he is wrong because although there certainly were serious convulsions, they were short-lived and the basic relationships of the major economies were not destroyed by major conflicts. That was what it had to face and could not survive after 1918.

The account of the 1920s is really very well done because he steers away from the passions of pride aroused by the peace settlement, the war debts and reparations and argues very persuasively that it was pure economic factors that really counted in the end. On the other hand Peck's description of the post-1945 recovery in Europe is limited by the absence of any existing comprehensive study – something Alan Milward's forthcoming book will put right. Even so it is hard to agree with him that the years to 1953 bore a resemblance to the classic free trade era, perhaps that was the American aim but the distortions and controls were too severe for such a comparison to hold good.

But perhaps gloom over the learning process in international economic relations is too much influenced by the disasters since 1974. After all, the relatively liberal trade era of the previous twenty years had been extremely prosperous for many nations, and even the third world received enough aid to weather the worst consequences of the demographic explosion. However, Foreman-Peck is surely right in attributing this success to the staggering impact of new technologies rather than to the positive operation of the international economic system. It is a book to be read if only because these are great issues and they are set out so clearly and intelligently.

S. B. Saul

Professor Saul is vice-chancellor of the University of York.


Foreman in the V.I. Lenin Works, Czechoslovakia

System crisis

The Economies of Eastern Europe: In a time of change
by Adam Zwass
Macmillan, £20.00
ISBN 0 333 36982 3

The author of this analysis of the problems facing the East European economies held managerial positions in the Polish Central Bank and Comecon financial institutions in Moscow before emigrating to the West in 1969. Since that time he has become a leading authority on the operation of East European financial institutions, and is excellently qualified to undertake the wider task of assessing the performance of the Soviet economic model in Eastern Europe.

Dr Zwass's principal hypothesis is that the Soviet planning system is essentially a Russian phenomenon which owes more to the specific conditions prevailing in the USSR in the post-revolutionary period than to concepts of utopian socialism, and is particularly ill-suited to the needs of smaller European states dependent on foreign trade, and in particular on imported raw materials.

The low level of industrial capital formation in the interwar period in Bulgaria and Romania, and to a lesser extent Poland and Hungary meant that the Soviet model initially helped to stimulate industrial growth, albeit concentrated on a disadvantageous production structure, by generating a high level of savings and investment. The model was less suited to the conditions prevailing in the industrialized economies of Czechoslovakia and the German Democratic Republic, and currently provides few solutions to the problems of sophisticated industrial change experienced throughout the area.

Dr Zwass argues, like the economist Wlodimierz Brus, that state ownership of the means of production has not resulted in genuine social ownership and has partly resulted in worker alienation and low productivity. In addition the social system is largely regarded as alien in Eastern Europe, while popular attitudes are still influenced by memories of Soviet exploitation in the Stalin era. Consequently he argues that both economic and political reform are essential to stimulate innovation and enterprise, and for the efficient static operation of the East European economies.

The absence of a price signalling system prevents the formulation of rational plans, while the existence of a single-party dictatorship provides insufficient obstacles to the implementation of incorrect, or inappropriate, economic policies. "There is a general unwillingness to call the parameters of the five-year plan into question." Consequently both Poland and Romania continued to invest heavily in energy-intensive industries long after the initial OPEC price increases.

Even the Hungarian authorities initially responded to economic problems in the early 1970s by recentralization (although this has been reversed since 1979) and Dr Zwass argues that further-reaching economic decentralization may be impossible without political liberalization. Political reform does not imply the return of the ancien regime. The economic crisis in Eastern Europe is a system crisis, but not a crisis of democratic socialism, which has never been attempted. The author concludes with an appeal (largely directed to the USSR) for peaceful coexistence which would reduce the Soviet need for "expansion for security".

The book was originally published in German in 1982 in two volumes, the first consisting of an analysis of the common problems of economic management and reform in Eastern Europe, and the second of case studies of the individual economies (excluding Albania and Yugoslavia). The English edition is confined to the second volume, which is perhaps unfortunate as it reduces the ability of the non-Soviet specialist to examine Dr Zwass's analysis more independently.

Alan H. Smith

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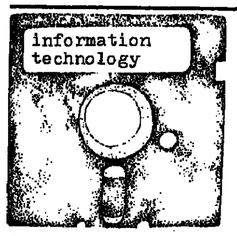

Easy access from a desk-top terminal

Several trends in the development of information technology are ensuring that computer communications will be the key element in higher education computing. The move away from the isolated, self-sufficient mainframe computer towards a distributed set of minicomputers and microcomputers is one example. Networks are essential to allow files to be transferred between systems, to ensure that users can get access to a variety of facilities from a desk-top terminal and to permit the sharing of expensive peripherals. Underlining this trend, the recent Department of Education and Science *Report of a Working Party on Computer Facilities for Teaching in Universities* envisages a large proportion of students equipped with their own personal microcomputer work-station, each of which would require a network connexion to realise its full potential. Fortunately, according to several authorities, networking is an area where the university sector in Britain leads the world.

It is easy to become mesmerized by the piece of wire emerging from the back of a microcomputer and imagine that this is the extent of the networking problem. In fact, this is less than the tip of the iceberg, representing perhaps 1 per cent of the problem. It is convenient to divide the task of establishing useful communications between a pair of computers into two parts. There must be an "interconnexion" path between the computers and they must agree how they are going to "internetwork".

An analogy with the telephone network may help. A cable (1 per cent of the problem) connects the telephone *to the local exchange which links into a world-wide network* established by the telecommunication authorities. This network is capable of providing an "interconnexion" path to any other telephone in the world. However, I will be unable to have a useful dialogue with a subscriber in China if I only speak English and he can only speak Mandarin. We will not be able to "internet". Providing the interworking part of computer communications can be far more difficult than solving the interconnexion problem. Laying a cable between the telephone and the exchange might look easy compared to setting up a world-wide telephone network; but consider teaching all the world's subscribers to speak Esperanto.

The languages that computers use to communicate are called communications protocols. Protocols define what data should be sent down the line, the way the data should be structured and what actions should be performed on their reception. The protocols used to ensure interworking are called high-level protocols. Low-level protocols are used to establish, maintain and relinquish the interconnexion path. In the telephone network, establishment is performed through picking up the receiver, waiting for the dial tone and dialling, and relinquishment by replacing the receiver.

Most computer networks can only be used to interconnect equipment from the same supplier. This is because the protocols used on the network are specific to that supplier. For example, in general only Acorn computers will support Acorn's ECONET protocols or Digital Equipment machines the DECNET protocols. This is clearly undesirable, especially in higher education establishments where there often exists a range of computing equipment from different suppliers. Such computers can only be interconnected if each supports a set of "standard" non-proprietary protocols. A network of this type is often referred to as "open", because any type of computer system can in principle be connected. The academic community in Britain is establishing just such an open network between and within each of its institutions.

Many relevant networking techniques were researched in the Department of Defense's ARPANET in the United states and at the National Physical Laboratory in this country towards the end of the 1960s. British universities were not far behind and several separate networks were established during the 1970s. For example, the south-west universities of Bristol, Bath, Exeter, Cardiff and the University of Wales Institute of Science and Technology collaborated to establish a network for shipping jobs between their mainframes. Remote job entry facilities were also provided elsewhere, making it possible to send work submitted locally to expensive large computers provided at a few specialist centres such as the Cray supercomputer in the University of London.

It soon became clear that there would be enormous advantages in linking all universities, and in integrating these communications with the research councils, particularly the Science Research Council (as it then was), which had established its own separate networking systems. As this could only be achieved through the adoption of common protocol standards, this lead to a requirement for a central coordinating agency. Consequently, following the report of an earlier body, the Computer Board for Universities and Research Councils (which is primarily responsible for funding university computer centres) and the separate research councils (which fund computers in specific research disciplines) set up the Joint Network Team in 1979. While the remit of the Joint Network Team only officially extends to cover university and research council networking, an attempt is made to include the wider polytechnic and higher education community wherever possible.

The objectives of the networking programme subsequently established are to ensure that any computer or terminal can communicate with any other in the academic community, for the purposes of terminal access, file transfer or for shipping jobs or electronic mail. Terminal access gives the potential for a desk-top visual display unit to be connected to a remote computer system and behave essentially as if it were directly connected. File transfer allows data to be transmitted between the filestore on one system and the filestore on another computer elsewhere. Job shipment allows files containing work specifications to be sent across the network and run on remote computers. The resulting output is then sent back to the user across the network. Electronic mail allows a message to be sent by one user on one computer, across the network to the filestore on another computer, where it can be read later by the user to whom it was addressed.

The interconnexion problem is being tackled by establishing a hierarchy of networks to link all computers together. Every university will have a campus network and all universities within the British academic community will be interlinked by a dedicated "wide-area" network. A link will be provided to British Telecom's Packet-Switched System (PSS) for access to sites outside the community. This is a public data network based on the X25 standard which now has links to public "packet-switched" networks in other countries throughout the world. X25 networks are ideally suited for the kinds of uses I have already described.

To ensure interworking, a set of protocols has been adopted to provide the file transfer and other facilities required. International standards only exist for packet-switched network access (X25) and for terminal access. Consequently, most of these protocols are of purely British origin. As each protocol specification has a cover of a different hue, they are affectionately known as the "coloured books".

The specification of standard protocols must be followed up by a strong programme to ensure their adoption. The networking programme has consisted of four main elements. A development programme is providing suitable hardware and software packages to support the protocols on existing computer systems. A programme of campus network installation funded by the Computer Board is gradually equipping each university with basic network facilities. Existing wide-area networking links are being rationalized to provide a single unified packet-switched network to interlink campuses (the Joint Academic Network JANET, a private X25 network). Finally, steps have been taken to ensure that all major new computer systems can be connected to the network by insisting that all such systems are procured with the relevant protocol packages.

This programme is clearly ambitious and might be thought not to be cost-effective at a time of financial constraint. Certainly networks are not cheap, as for example in the connexion charges for a simple terminal which can be a substantial fraction of the total cost of the terminal itself. However we must compare it with the alternative of providing each user locally with the facilities which he requires and which he has become accustomed. Providing each university with a Cray supercomputer for its quantum chemists is clearly unrealistic. Similarly, it can be shown that the provision of an "any-to-any" network is cheaper than establishing separate connexions for each use, and is certainly much more flexible.

The campus network facilities at the University of Exeter may help to illustrate the current state of network developments and the uses to which networking can be put. Exeter was one of the first universities to install a GEC Campus Packet-Switching Exchange (CPSE) in 1982, but there are now 3 other sites with similar equipment. Computer systems from ICL, DEC and PRIME are connected to the CPSE and each is equipped with software packages to support the standard protocols. There are protocol packages for about 18 different types of computer system now in existence.

Terminals are connected into the network through concentrators each of which supports up to 16 or 32 terminals. Exeter now have 16 concentrators (known as packet assembler disassemblers or PADs) supporting a terminal population of nearly 300. There are about 300 terminal concentrators installed throughout the academic community supporting several thousand terminals and these numbers are growing rapidly. This is in line with the long-term strategy of divorcing computing and communications and ensuring that user terminals are connected through simple, dedicated, network concentrators.

The CPSE has two connexions to wide-area networks. The connexion to JANET permits communication with systems on most university sites and at the major research council centres. Exeter are primarily interested in accessing the mainframes of other universities in the south-west, the Computer Board national facilities at the University of London Computer Centre and the large SERC centre at the Rutherford Appleton Laboratory. The link to British Telecom's public network PSS is primarily of interest for international calls to the specialist database facilities now available in Europe and North America. Not all universities are connected to both JANET and PSS. However, access to one automatically permits access to the other, as the two networks are interlinked.

Although much has been accomplished in the growth of university networking, further developments will be required in the foreseeable future.

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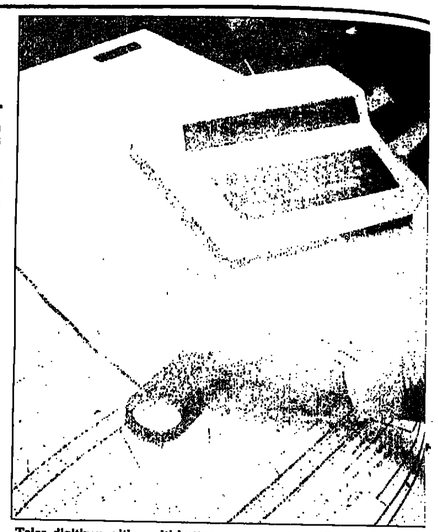


Talos digitizer with multi-button cursor system (Sintrom Electronics). A digitizer consists of a table or board similar to a drawing board, and a probe consisting of a pen, or cursor, which can be moved over the surface. Just one of the many design aids illustrated in the second edition of C. R. Besant's *Computer-Aided Design and Manufacture*, published by Ellis Horwood (Wiley) at £21.00 and £8.50. See facing page.

Digital drawing-boards

The single most important step in the ascent of man, according to Bronowski, was the production, some 30,000 years ago, of the Lascaux cave paintings; their purpose, he believes, was to allow the young man of the tribe to anticipate, and thus be the better able to cope with, the future reality of the hunt. Much later – around 5,000 years ago – man developed the skills to model, with plan and elevation, design intentions for his habitat. The plan and elevation have been with us, in almost unchanged form, ever since. Only during the past decade, however, have we seen the emergence of a new generation of design models – dynamic rather than static, predictive rather than descriptive, computer based rather than paper based.

Whatever the prospects and problems presented by computer-aided design (CAD), its emergence has usefully focused renewed attention on that most complex of decision-making activities – design, that is, making explicit proposals for a change from some existing state to some future state which more closely approximates to the ideal. Ackoff has identified the necessary and sufficient conditions of the ideal state: plenty (through resource management and husbandry), knowledge (through education and training), good (the removal of conflict through consensus) and beauty (the stimulation of an expanding set of desires). These conditions may yet serve as the dimensions on which we measure the success of our design aspirations.

There is some agreement among observers of the design activity as to the thinking processes which take place. "Analysis" is the process of collecting, collating and correlating the information relevant to the design problem; "synthesis" is the process of hypothesizing (that is, generating or creating) a formal solution to the design problem; and "appraisal" is the process of testing and evaluating that solution against cost and performance criteria. These processes operate cyclically at a variety of levels of scale and detail as the design idea takes shape. This complexity, and the idosyncratic ways in which designers respond to it, proved too much for both the so-called first and second generations of design methods, the former rooted in the traditions of mathematical optimization, the latter in the social science of the 1960s.

To understand the importance of computers to design decision-making it is helpful to look for historical precedents in the evolutionary stages in the development of man's control over his environment. The first major stage in the exercise of this control was concerned with the "amplification of physical power" first through simple tools, then the steam engine, the internal combustion engine, rocket power and currently nuclear power. The second major stage was concerned with the "amplification of the senses", first with the simple telescope and microscope, subsequently with the radio telescope and the electron microscope. The third and by far and away the most important stage is occurring now and is concerned with the "amplification of the intellect". Needless to say, this capacity for amplification would be useless if mankind did not already possess some capacity for physical power, some degree of sensory perception and, of course, a modicum of intellect.

Tracing the development of CAD during the past decade is fairly easy. One can turn, for instance, to the proceedings of conference series devoted exclusively to the topic. One such series, sponsored by the journal *Computer Aided Design*, has featured conferences every two years from 1974. The 1984 conference is likely to be attended by some 600 delegates, with between 1,000 and 2,000 visitors to the associated exhibition of CAD systems.

Within the broad area of mechanical engineering there is enormous scope for CAD. Applications include the study of rotating machines, linkage mechanisms and pressure vessel design. The numerical control of machine tools by data generated during CAD operations has led to the concept of CAD/CAM – that is, computer-aided design and manufacture. This concept, stimulated by developments in robotics, has led in turn to the study of flexible manufacturing systems (FMS), seen as vital to the industrial regeneration of developed countries.

In structural engineering, computers have provided the capability of applying finite element methods of stress analysis to structures of any complexity: buildings, bridges, dams, ship hulls, car bodies, air frames and myriad other structural systems. In aeronautics and naval architecture, computers aid in the design, and carry out the real-time control, of navigation and guidance systems.

In electrical and electronic engineering, the application of CAD to power supply and distribution systems and to electric motors is somewhat overshadowed by the enormous growth in the computer-aided design of circuitry. The very large scale integration (VLSI) techniques for microprocessor circuitry exemplify the use of computers in the design of computers.

Research and development work in CAD addresses the three main features common to virtually all CAD applications: databases and database management systems; computational methods; and interactive graphics. The relationship of these three areas can best be illustrated in the context of computer-aided architectural design (CAAD). To use a CAAD system the architect needs to input a design hypothesis. The obvious way to represent a building layout is to draw it, and this calls for a sophisticated graphics interface that can provide the same facility which the architect would enjoy at the drawing board. Once the design hypothesis is entered, the prediction of its cost and performance attributes requires a range of complex computations concerned with thermal energy flows, lighting levels, movement simulation, structural stability, capital expenditure, recurring expenditure, and so on. The computation draws on data on climate, fuel tariffs, material costs, physical properties, and so on. Output from the program should be as user-oriented as the input, making full use of graphs, histograms and charts as well as representing the design in plan, elevation and of course in perspective. The whole system must be capable of responding to the dynamics of the architect's search for that design which offers the best ratio of performance to cost.

During the past decade CAD systems have developed dramatically; during the next decade the development will accelerate. One can anticipate the further incorporation of logic theory in the form of fuzzy sets, the development of natural language query systems, and the emergence of fifth-generation "expert systems" embodying designer expertise. The implications of these developments – for design practice and for design education – are worth anticipating.

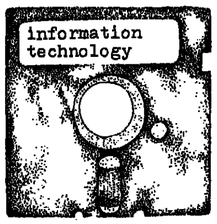
Design practice will become significantly more competent. At the conceptual stage in design, many more design alternatives will be explored and each will be tested with greater rigour. This will have the effect of accelerating innovatory design at the frontier of technological feasibility. This new capability will bring about powershifts at individual and institutional level. As knowledge-based systems soak up expertise and experience gives way to parametric investigation, the new graduate with a CAD system will be infinitely more effective than the consultant with a lifetime's experience. By the same token the professional institutions, geared to hiding the flimsiness of their members' expertise from the rude gaze of those who must pay the agreed fees, will have to change or wither away. For consultant and Chartered Institution, the information technology revolution holds the same promise as did the industrial revolution for craftsman and Trade Guild.

The implications for education are no less significant. Access to CAD systems holds the promise of an education which is much more geared to case study and project-based learning. Design may emerge as the intellectual discipline common to all branches of engineering and technology. Some students will opt to study the design of design aids, and this is likely to develop as an important postgraduate field.

Design, in its most general educational sense, where it is equated with science and the humanities, is concerned with the configuration, composition, meaning, value and purpose in the designed, as opposed to the natural, environment. Whereas the essential mode of communication in science is mathematics and in the humanities is language, the essential mode of communication in design is modelling – through drawings, physical analogues and, above all, CAD software.

T. W. Maver

Professor Maver is Director of ABACUS (Architecture and Building Aids Computer Unit Strathclyde) in the department of architecture and building science at the University of Strathclyde.



Continued from page 28

The majority of the campus networks installed are of the X25 packet-switched type, incorporating one or more central packet-switching exchanges. These can cope with medium speed traffic and can typically switch up to 100,000 characters per second. A new generation of high-speed local-area networks have been under development for some time. These can generally cope with speeds of up to 1,000,000 characters per second and have very different topologies. Ethernet technology uses a coaxial cable medium on to which connected stations can transmit and receive data. Cambridge Ring uses conventional twisted pair cable or optical fibres to link stations in a ring topology. Token Rings use a similar arrangement but employ different protocols for access.

These kinds of local networks will gradually be introduced into campuses, either on a per building or a wider geographical basis. Cable will be threaded around buildings to give an access point in each office at much less cost than with current point to point wiring schemes. However, local networks will be introduced only gradually because, although the technology is well understood, there are long lead times in both protocol standardization and product development, both of which are necessary before they can form the basis of open networks. It should also be borne in mind that the major traffic bottlenecks are usually in the attached computer systems. So increasing the basic network speed may have less effect on the actual transfer rates seen by a user than might be expected. A few universities are using Cambridge Rings as the basis of their campus network service now, and Ethernet installations will also appear in the next few years at a number of sites.

The emphasis on the development of protocol packages has been very much at the mainframe and minicomputer end of the scale. Microcomputers have usually been connected by making them emulate simple terminals. By switching input or output to disk files, simple file transfer can be effected. This kind of technique is rather unsatisfactory and is not suitable for the large number or workstations and range of users envisaged in the future. The main difficulties in providing microcomputers with an open networking capability have been the cost of the network connexion and the size and complexity of the programs which are needed to implement the standard protocols. Two developments may come to the rescue here.

The first is by using the proprietary networks available with many types of microcomputer, such as Acorn's ECONET for the BBC Model B. These offer low-cost connexion and in many cases it may be possible to "gateway" the proprietary network to the outside world. This technique is suitable for microcomputers in clusters and may well offer connexion at the lowest cost. However, gateways between high-level protocols do not usually offer the best possible service to users. The other alternative is to take advantage of the greater power and memory space increasingly becoming available which will enable the protocols to be implemented within the microcomputer. The costs of direct connexion to the network will gradually be reduced, but in the near future connexion through concentrators will probably be necessary.

The main development that most readers will see is the increased coverage of the networks. Campus networks will reach into most departments, more systems will be connected, and networking will extend into the non-university sector. Usage of electronic mail will broaden from the current restricted base of aficionados and be integrated with more general office automation facilities. Communication outside the academic community is currently restricted to terminal access because of a lack of international standard protocols. There is now considerable activity in international standardization circles which will provide these standards in the next few years and make mail and file transfer possible more widely. Protocol packages will become generally available and for most countries this will be the time at which higher education starts to enjoy the benefits of open networking, benefits which will already have been in existence in Britain for a considerable period.

Barrie Charles

Dr Charles is with the Computer Board and Research Councils' Joint Network Team based at the Rutherford Appleton Laboratory.

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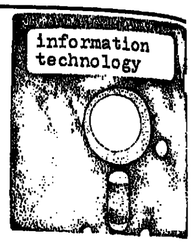
Geographical data-sifting



As a discipline geography has been in a state of near-continuous revolution for 20 years. The 1960s saw intense interest in the development and use of statistical techniques. From that time, past the disillusion brought on by realizing that "real world" data rarely meet the requirements of existing statistical (and usually aspatial) models and through the additional perspectives introduced by behaviourists, Marxists and others in the 1970s, the practising geographer has had to cope with a variety of innovations.

Superimposed on this diversity, there is now an increasing need to understand and to use developments in information technology. This trend both anticipates and mirrors the corresponding one in society at large. Its results are manifested in virtually every geography undergraduate in Britain taking at least one computing course. Moreover, many departments now have powerful computing engines such as DEC VAX computer and all have clutches of microcomputers. Why this should be so is more a reflection of research priorities, data availability and the diminishing costs of hardware and software than it is of "trendyness" or even the urge to fit students for the outside world.

Perhaps curiously, the availability of computing resources has re-invigorated some traditional geographic practices. The plotting of maps on projections customized for particular purposes is now, for instance, a relatively trivial matter, since the requisite data and software have been produced by the Central Intelligence Agency in the United States and made generally available. In general terms, however, the subject is still posited for many practitioners on the basis of description and on the isolation of the anomalous from a mass of data about places, people, processes or entities such as individual landforms. In a world where data collection is increasingly at second hand (witness the ready availability of data from the Agricultural and Population Censuses, of digital models of terrain and of meteorological data), the initial stages of much geographical research now include data-sifting.

Rarely are the routinely used techniques of great mathematical sophistication: Tukey's exploratory data analysis, statistical mapping techniques, "standard" descriptive statistics and classification tools are the norm, even though in some work these are applied to thousands or even tens of thousands of observations. One such instance is the analysis of areas of "deprivation" based upon selections from the 600 million numbers constituting the 1981 Small Area Statistics. A typical satellite image – 11,000 of which are required to provide one-time coverage of land areas of the globe – is made available by the National Aeronautics and Space Administration in the United States as a set of 30 million numbers. Even if dealing with sub-sets of such data, then, geographers are often operating at or near the limits of existing computer facilities. This, it must be emphasized, is no fad, for only these approaches will enable us to work at the level of spatial detail at which many processes operate or at which policy questions require answers.

There is an additional reason why it is usually desirable to have data in great geographical detail: it has been known for at least 40 years that the results of analyses are often highly scale-specific – that is, if we analyse the same data for counties and for electoral wards, the results are often very different. With detailed data and computer resources, we can readily repeat analyses at different levels of detail and establish the extent to which the answers are sensitive to changes in the "scale of viewing".

One traditional area which has developed rapidly during the past five years is remote sensing of the Earth and, in particular, interpretation of satellite data held in computer form. The bulk of the the expensive equipment used to analyse these data is now housed in geography departments; and in what is a highly inter-disciplinary activity, geographers have arguably been the most prolific individuals in reporting the results of research. Most of the remote sensing courses extant at undergraduate level are given within our discipline, and one half of the "national" MSc course based in University College London and Imperial College, London, is centred around the geography department of the former college.

It would be wrong to assume from all this that no original data collection is being carried out by contemporary researchers. Even in the computing-related aspects of the subject, all remote sensing interpretation to some degree relies upon calibration of results using ground truth. Fieldwork to collect this is continuing in several countries in Europe, in Australia, the Middle East and the United States as well as in Britain by such individuals as John Townshend, Tony Allan and Ray Harris. Neil Wrigley's work on the collation of information from numerous personal diaries, the analysis of which also involves detailed development of categorical data techniques, provides another example to the contrary. Projects led by Ray Hudson and by myself have created land use data sets covering over half a million properties; these were, of course, only collected because no such data existed elsewhere on which to validate hypotheses.

Geographers are, by and large, not heavily involved in hardware developments, although Gwyn Rowley's data logger is an exception and is now being marketed by Ferranti. Individuals such as Brian Whalley and David Unwin routinely build interfaces to link microcomputers with laboratory equipment; and at least one course includes an introduction to this topic for undergraduates. On the software side, Tim Adams (with Kevin Smith) has carried out highly innovative work on feature recognition in digital maps and data structuring using the ICL DAP parallel processor, Tom Waugh's GIMMS software is the most widely used mapping software in the world (having been adopted by Statistics Canada, as well as by the Department of the Environment, other government agencies and countless academics in Britain), and various individuals such as Derek Reeve and Robert Barr have created impressive software for statistical analysis and mapping using microcomputers. William Campbell (with Wendy Milne) has created a readily used and comprehensive library of software modules which can be incorporated in geographical programs.

Two developments in information technology of truly national significance have been brought about by geographers during the past four years. The national on-line employment and unemployment information system, designed and created by staff at the universities of Durham and Newcastle at the behest of the Manpower Services Commission, provides access to current and historical data for a variety of geographical areas and is constantly up-dated with new information from the Department of Employment. Mounted on the Durham computer, it is used daily by members of several government departments and by academics. The second development arose from collaboration between computer scientists at the University of Edinburgh and geographers at the University of Durham in a project financed by local and central government: the result was software to handle data from the 1981 Population Census. This now runs on about 150 different computer systems and won the British Computer Society's prize for the software providing the greatest social benefit in 1983.

Some other technical developments, though superficially less ubiquitous, are of fundamental importance. Stan Openshaw's classification of all 16 million individual households in Italy (where data were made available) is a good example: quite apart from the substantive importance of his comparison of results from this and from a similar classification of the data for 78,000 enumeration areas, this is a stunning computing achievement. Remarkably, he inverted the usual rules in classification – that is, that the computer time required is proportional to N^2 or, at best, to N log N where N is the number of observations. After a certain point, Openshaw's procedure requires negligible computer time for additional observations, causing him to remark: "Clearly classifying the world would only take a little longer".

Beyond a concern for the development of new tools or with the mere monitoring of changes in the environment, considerable use has been made of the computer for modelling purposes. Some of the earliest work was that by Alan Wilson who created a family of "optimal planning" models using entropy maximizing approaches; more recently, he has produced intriguing developments based on catastrophe theory. Demographic accounting models developed by Philip Rees are also innovative and have substantial practical importance. Openshaw, Philip Steadman and Owen Greene have modelled in great detail the effects of various hypothetical nuclear attacks on Britain, taking into account empirical evidence on blast effects, fallout, meteorological and other factors: their results, recently published as *Doomsday: Britain after nuclear attack* (Blackwell, 1983), sharply contradict Home Office figures and have forced a re-appraisal by that department. Less apocalyptically, the work of David Briggs and others in modelling environmental variables such as biomass potential and in designing a computer system has demonstrated the technical feasibility of the project proposed by the EEC, entitled Information System on the State of the European Environment. Given the enormous volumes of data collected by very different techniques and the open-ended nature of the manipulation facilities required by the EEC, this is quite an achievement.

Some of the more novel and occasionally difficult aspects of this modelling involves extraction of data from what has hitherto been almost a "write only" form of data storage – that is, maps. A topical example has been the efforts of Ron Johnston and David Rossiter, extended by others, on parliamentary and ward re-districting. Having derived a table of which "building block" areas are contiguous to each other by analysis of maps converted to computer form, their algorithm produces the "best" statistical groupings which meet the main criteria of constant electorate, compact areas and restriction to a particular local authority area. Maps can then be produced of the results and Boundary Commissioners can interact with the computer to query the effects of modifications which they believe to be desirable. Another example founded on contiguities of "building block" areas is the work of Michael Coombes and his colleagues who are carrying out a complete revision of the area base on which all manpower planning in Britain is founded. Financed by the Department of Employment, these workers are creating a wholly new set of travel-to-work areas, based on use of the 10,000 by 10,000 matrix of journey to work flows derived from census data.

This does not, of course, exhaust the list of such work by geographers.

Current research includes that on the prediction of natural hazards and the quantification of their impact on local populations, the modelling of "habitability" and other characteristics of terrain, and the prediction of the location and frequency of man-made changes in the topography. Because of its highly interdisciplinary nature, some of this work is carried out in active collaboration with those in adjacent fields.

A distinct trend, dating from the early 1970s and fostered by people like Terry Coppock and Peter Hall, has been the increasing role of external agencies in providing financial support for projects. Computing-related research has certainly played a significant role in this external funding.

At a time of such rapid developments in the university and polytechnic sector of education, it is both curious and depressing that little "trickle down" seems to be occurring in schools. It is particulary curious given the strength of the subject at school level and the burgeoning use of microcomputers. Yet available geography software is trivial in the main and certainly does not compare with the best of that in physics and chemistry. Perhaps the brightest hope lies in the work of David Walker and colleagues in their project at Loughborough University of Technology, funded by the Microelectronics Education Programme. Clearly, there is educational advantage in schools making use of up-to-date information and maps for their own local areas, perhaps drawn from national data-bases.

All these developments have already engendered substantial changes in what and how we teach and in how we prosecute and fund our research. Further changes are inevitable as routine and simple access to remote databases via computer networks becomes available and as integrated tools – geographical information systems – replace ad hoc software.

Some of the developments will not be easy to realize. There are, for example, now more maps made by non-specialists than by trained geographers or cartographers and the results are often highly misleading: a fifth-generation "expert system" is clearly required. I suspect, however, that the biggest effects of computerization have yet to appear and are still unpredictable. However, they will appear once we think less of computers as tools for replicating what could be done manually and more as opportunities which permit us to tackle quite different research problems.

David Rhind

David Rhind is professor and head of the department of geography at Birkbeck College, London.

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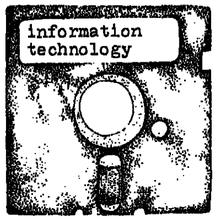
Intelligent computer tutors



In 1962 Richard Smallwood was awarded a PhD from the Massachusetts Institute of Technology for a thesis entitled "A Decision Structure for Teaching Machines". Smallwood had implemented a computer-based teaching program which would present a frame of information to a student followed by some questions to test mastery of the material in the frame. The system would then present a new frame of information to the student. The systems' choice of frame would depend on the students' past work and rate of learning. Smallwood's system is superior to an automated programmed learning textbook because it takes into account all the students' past work (and not just the last answer to the last question) and because it tunes its own performance by trying out novel sequences of frames on students with different learning characteristics.

In 1973 one of Smallwood's research students, Ralph Kimball received a PhD from Stanford for his work on a self-optimizing computer tutor for symbolic integration. Kimball's system can reasonably be described as a tutor because it can *itself* exercise the mathematical reasoning skill that it is trying to teach its students. It is able to do this because it incorporates an artificial intelligence program (an "expert system") which can solve the types of integration problems that undergraduates are typically given. Kimball's computer tutor can help a student who is stuck on a problem by suggesting the transformation it would use itself. The computer tutor also improves its own integration skill by recording the methods used when a student solves a problem with less transformations than it would use itself.

Eleven years after the completion of Kimball's work, I would nominate the Smalltalk system developed by Alan Kay, Adele Goldberg and colleagues at the Xerox Palo Alto Research Centre as the most advanced new system in computer-based learning. Smalltalk provides a very high standard of graphics and simulation facilities. The Smalltalk system has an elegant underlying model based on objects communicating via messages. An example of an educational application of Smalltalk is Laura Gould and Bill Finzer's Trip system which animates certain algebra word (or story) problems. The student can see problems acted out on the screen. For example, in a problem about movement of trains, the trains move across the screen while simultaneously the values in boxes and meters portraying the associated variables are seen to change. Smalltalk is a very general system and applications have included music, animated cartoons and the modelling of physical systems where a collection of components constrain and act on each other.

These three systems represent the good news about computer-based learning. Smallwood's work shows how it is possible to adapt to the progress of the individual student. Kimball's tutor can comment in an intelligent way on a student's partially completed problem solution. The Smalltalk system makes it possible for students to use, play with and learn from complex simulations presented via elegant computer graphics. In addition to such improvements in educational quality, computer-based learning has great potential for improving access to education. Blind students can use systems with braille keyboards and speech synthesizers, and physically handicapped students can use small movements to point to choices on a computer screen. Housebound (or workbound) students can dial up distant computers and interact with the programs stored there or use electronic mail to communicate with their tutors or collaborate with other students.

The bad news is the very poor educational quality of the computer-based learning software packages generally available both in the British and in the American educational systems. Very few of the drill and practice programs available on microcomputers adapt sensibly to the errors made by individual students. The computer "tutors" used in universities do not incorporate expert systems and therefore cannot show the student how to exercise the skills being acquired. Packages incorporating ideas from Smalltalk are now available on expensive computer systems for business applications but not on educational computers. With one notable exception, namely Seymour Papert and Wally Feurzeig's LOGO language, the artificial intelligence work with educational implications has not made any impact.

As I am concerned about the potential of computers for improving the quality of education, I will address the question "will the next 11 years be the same as the past 22 years?" To date, the big push behind applying computers to education comes from the state education departments. There are a variety of motives behind this push, including increasing the "efficiency" of the educational system and ensuring that students are familiar with the new technologies that are now perceived as vital for our economic future. In the 1970s there were a number of large-scale evaluations of computer-based learning including the National Development Programme in Britain and the TICCIT and PLATO projects in the United States. These evaluations produced the traditional results – "no significant difference" between student scores and attrition rates for the new computer-based teaching method and the scores and rates for the traditional methods. This is not too surprising, as the materials evaluated were for the most part mundane copies of existing educational practice. Two things went wrong in these evaluations. First, efficiency as reflected by increased staff input went down. Second, by the time these studies were completed they were out of date. The cheap microcomputer had arrived making a nonsense of many of the technical and cost assumptions behind these projects.

The lesson about the speed of technological change has been learnt. In the 1980s initiatives such as the Microelectronics Education Programme (MEP) and the Computer Board's working party on facilities for teaching in universities are planned on the assumption that computer hardware will continue to get cheapor and that other technological developments will continue apace. For example, the Computer Board's working party expects future student work-stations to be portable, to have high-speed communication facilities, to support colour graphics and to have considerable memory. Other contemporary technical developments include speech generation chips, video-discs (with 54,000 frames of video storage), teletext systems (such as Prestel), high resolution graphics and telewriting systems (such as the OU's Cyclops remote blackboard system). Developments that we can expect in the next 11 years include the flat screen (making computers more portable and even cheaper), the writable videodisc (on which new control or student progress information can be stored), speech recognition systems, image processing and further into the future "fifth generation" computers incorporating many microprocessors on a single chip and designed to support artificial intelligence applications.

Educators are clearly right to be concerned about the pace of these technical developments. The OU suddenly finds that 48 per cent of its students have reliable access to a microcomputer. A BBC survey reveals that, on average, secondary schools now have five microcomputers each. It is difficult to respond to these changes in access to the hardware and the attendant changes in student expertise. Students will soon be complaining that the computing facilities in higher education are inferior to those they had at school (or home).

One aspect of computer-based learning that has not changed is the cost of producing educational software. A package that might occupy an individual student for an hour can take 200 professional man-hours to produce. There is every reason to suppose that, as in industry, software production costs will continue to rise. One of the reasons for this is that users have increasingly higher standards. They expect colour graphics, reliability, spelling correction and "user friendliness" via menus and help facilities. Another reason for the increase in costs is the profusion in hardware and software standards. If a package is to run on a variety of microcomputers then these will have different screen formats, different operating systems, and different filing systems, and use different dialects of the programming language in which the package is written. We can expect the standardization problem to continue because the computer manufacturers are engaged in a "winner take all" struggle, and uniform standards would help their weaker or newer competitors.

The whole process of designing, implementing, debugging, documenting and distributing educational software is very time-consuming and expensive. There are no obvious technological solutions. Good educational design cannot be automated and the authoring systems which are used to help produce educational software are of limited value. The simple ones are either very restricted and can only be used to produce frame-based packages with less adaptivity than Smallwood's system. The sophisticated authoring systems may produce some staff time savings (say 100 hours rather than 200 hours for one student hour) but their use requires substantial programming skills.

At present many of the advocates of computer-based learning are not honest about the real costs of producing educational software. One result of this is the "yacht in a garage" syndrome. This occurs when a teacher or lecturer with rudimentary programming expertise attempts to use a language like BASIC and a small microcomputer to develop educational software. Now, armed with a hammer and a saw, it is in principle possible to build a yacht in your garage. But a professional boat-builder builds a better yacht more quickly in a properly equipped boat yard. Similarly, to develop a program which runs efficiently in a small microcomputer the professional will use sophisticated tools and test out various versions in a large computer. I believe that one effect of the cheap small microcomputer has been to reduce dramatically the average quality of educational software. Many of the new packages are less adaptive versions of computer-based learning systems implemented on larger computers in the 1960s and 1970s.

I am pessimistic about the prognosis for 1995. The potential for new developments that improve the quality of some individual learning situations and that dramatically extend the access to education is there. But I would not be surprised if 11 years from now intelligent computer tutors and high-quality graphics-based simulation systems are still not available in our colleges and schools. This could lead to a very unbalanced situation as the commercial world is eagerly taking up the new technologies for use in industrial training and leisure products. Thus, for example, artificial intelligence work on natural language understanding and expert systems is being applied to the task of teaching apprentices about diagnosing faults in electronic equipment, videodiscs are being used to train car salesmen on the features of the new models, and advanced computer graphics are being applied to the design of spacewar games. These commercial developments continue apace while the educational world refuses to admit the cost of good quality software. The result is likely to be 10 more years of mediocre computer-based learning in the state education system.

Perhaps the most alarming omen is that, although Smallwood, Kimball, Kay and Goldberg were originally motivated by a desire to innovate with computers in educational settings, they have now all chosen to find their intellectual stimulation and financial rewards in the commercial sector.

Tim O'Shea

Tim O'Shea is a senior lecturer and Director of the Micros In Schools Project at the Open University's Institute of Educational Technology. He is a member of the CNAA Educational Computing Panel and the Alvey Advisory Group on Intelligent Knowledge Based Systems.

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NOTICE BOARD

Awards

Edinburgh College of Art, for the second year in succession, has won the Stowells Trophy prize for painting. The Gold Award worth £400, Richard Wotherspoon, whose untitled painting is now on exhibition in the Royal Academy, London.

The Stowells Trophy Gold Award for an original print has been won by Robert Cornish, a second-year student at Canterbury College of Art. He has never before shown work in a major public exhibition.

Carl Bullock, a first-year student at Sheffield City Polytechnic, won the Stowells Trophy Silver Award for his print entitled *Love Frosplane*. His prize is worth £200. Carl Bullock comes from Brucknell in Berkshire.

Oxford University has announced the following awards: The Andrew Levens travel bursary 1984 to Mark Trevelyan, Brasenose College and Simon Brown, St Anne's College.

The Sotheby Parke Bernet travelling scholarship 1984 to Kathleen Augherson, St John's College and Richard Cameron, Trinity College.

German History Prize 1984. First prize was awarded to John Cassidy, University College and Brett Fairbairn, New College. Second prize was awarded to Richard Harrison, Lincoln College.

The British Federation of University Women has announced the following awards.

The Irene Hilton Memorial Award has been made to Alma Evers BA (Birmingham University) for four weeks' residence in Crosby Hall for research on Thomas Hardy.

A residential scholarship tenable at Crosby Hall to Elizabeth S. Shmidt (University of Wisconsin) researching the effect of land policy on rural women in Africa 1890 to 1936.

A residential scholarship tenable at Crosby Hall to Professor Naomi Neumann of Laval University, Quebec, to study the effect of the physical attributes of school buildings on children and their abilities.

A British Federation of University Women Award to Anne Griffiths LLB (University of Edinburgh) to research the legal settlement of family disputes among the Bakwene in Botswana.

Barclays Bank has established a new painting award. The £10,000 prize will enable the winning artist to devote a year to study and painting in this country or overseas. The first award will be made in July 1984.

Artists eligible to compete for the award will be postgraduate students, under 30 years of age, in their final year at the Royal College of Art, Slade School of Fine Art and the Chelsea School of Art.

The Geographical Society of Sweden has announced the award of its Vega medal to Professor Hubert H. Lamb, Emeritus Professor of the University of East Anglia. The medal is given to "persons whose work is of utmost importance to geographical science". In Professor Lamb's case it is awarded for his "pioneering contributions to the history of climatic variations and their dependence on changes in the global atmospheric circulation".

Very often, the only evidence we have of interior decor in the past comes from scraps of wallpaper. These eighteenth century examples are from *Wallpapers: Four Centuries of Design*, a Victoria and Albert Museum exhibition on until April 29. The medallions and landscaped figures on the left are from Doddington Hall, Lincolnshire while the other pattern is of flowers and foliage interspersed with parrots and cats.

Chairs

EDINBURGH

The University Court has appointed Dr Michael Radcliffe Lee to the new Chair of Clinical Pharmacology with effect from October 1, 1984. The chair has been funded by a generous benefaction from the Squibb Corporation.

LANCASTER

Dr Sally Tomlinson, a leading researcher into the education of ethnic minorities in schools and special education, has been appointed to a Personal Chair in the Department of Educational Research with effect from August 1. Dr Tomlinson, who is a senior lecturer in the department, has had seven books and numerous articles published about these two subjects.

The University of Glasgow has appointed Dr Mabel D. Huntley to the Gardiner Chair of Biochemistry with effect from September 1, 1984. Dr Huntley is at present Reader in Biochemistry at the University of Manchester Institute of Science & Technology.

Dr Mark Ferguson has been appointed to a chair in basic dental science at the University of Manchester.

Events

Bulmershe College of Higher Education, formerly Bulmershe (and Berkshire) College of Education, is celebrating its twentieth anniversary during the academic year 1984/85. In addition to a programme of plays, concerts, recitals and open lectures, special events and exhibitions will also be organized culminating in a reunion weekend in March 1985. Former staff and students are asked to contact Brian Palmer, deputy principal, Bulmershe College of HE, Earley, Reading RG6 1HY for further details.

A one-day seminar on social control in twentieth century Canada will be held on Saturday, May 5 at the Centre of Canadian Studies, University of Edinburgh, at 21 George Square, Edinburgh.

It is planned as the first of a series in which specialists in various disciplines who are interested in Canada will meet at the centre to discuss their work. Further details from Ged Martin, at the above address.

The 1984 London Book Fair will be held at the Barbican Exhibition Halls, Golden Lane, EC2 from April 10 to 13. It will be open from 9am to 6.30pm Tuesday to Thursday and from 9am to 3pm on Friday.

Honorary degrees

NOTTINGHAM

LLD: Lord Denning, Master of the Rolls 1962 to 1982; Mr Punchatcherman Coomaraswamy, Ambassador of the Republic of Singapore to the US and a graduate of the university; Sir Edward Thompson, deputy treasurer of the university and former director of Allied Breweries Ltd.

MA: Mrs Joan Freeman, chairman of the East Midland District of the Workers' Educational Association.

MD: Professor A. N. Exton-Smith, professor of geriatric medicine at University College Hospital Medical School, London.

Professor Henry Walton, of Edinburgh University's Department of Psychiatry, is to have the honorary degree of Doctor of Medicine conferred on him by the University of Uppsala, Sweden, on May 29, for his services to medical education internationally.

Professor Walton has been the president of the Association for Medical Education in Europe since its inception at Copenhagen in 1972. He is also president of the World Federation for Medical Education.

Appointments

OXFORD

The Visitors of the Ashmolean Museum have appointed Dr Nicholas Penny to the keepership with effect from October 1, 1984 following the retirement of Dr Gaillick.

Dr Peter Pulzer, lecturer in politics at Christ Church, has been appointed to the Gladstone Professorship of government and public administration, with effect from January 1, 1985.

Mr Norman Stone, lecturer in modern European history and fellow and director of studies in history, Trinity College, Cambridge, has been appointed to the professorship of modern history with effect from October 1, 1984.

The electors have appointed the Rev Dr Maurice Wiles, Canon of Christ Church and Regius Professor of Divinity, to the Bampton Lectureship for 1986.

The Rev Professor Pascal A. Kerr has been elected to a visiting senior research fellowship at Jesus College for 1984/85. Also at Jesus, Mr Robert Gay has been elected to a junior research fellowship in philosophy for two years from October 1, 1984 and the Rev Julian Hubbard has been appointed chaplain for a period of five years from September 1, 1984.

UNIVERSITY COLLEGE, CARDIFF

Senior Lectureships: Dr R. Avskes (education), Mr C. Baber (economics), Dr R. Eccles (physiology), Mr E. Evans (education), Mr W. A. Gray (computing mathematics), Dr D. H. Harrocks (electrical & electronic engineering), Dr P. C. R. Hughes (anatomy), Mr R. M. Jones (school of social work), Dr P. A. R. Pleasants (pure mathematics), Dr J. Shorley (economics), Dr J. A. Spittle (metallurgy), Dr R. Stowell (music)

Lectureships: Mr D. Bull (electrical & electronic engineering), Dr P. G. Edwards (chemistry), Dr I. G. Hughes (civil & structural engineering), Dr P. Stokes (education - temporary)

The Rev Neil Richardson, a Methodist student chaplain in Manchester, has been appointed tutor in New Testament studies at Wesley College, Bristol. He will succeed the Rev Dr Ivor Jones who becomes principal of Wesley House, Cambridge in September

Mr Tom Clements has been appointed deputy chairman of the Construction Industry Training Board from April 1 this year until July 31, 1985. Mr Clements is chairman of Thomas Clements and Sons Ltd, Newcastle-upon-Tyne and has been a member of the main board since 1982

Mr Henry Jones, now assistant chief accountant at ICI's Mond Division, is to be the University of Manchester's first director of finance. He takes up the post in July.

The poet Fleur Adcock will be the next Eastern Arts Fellow in Creative Writing at the University of East Anglia. She will be in residence on campus for the summer term which starts on April 30, 1984 and ends on July 6.

Fleur Adcock was born and educated in New Zealand and worked as a librarian until 1979. She has had several books of poetry published, mainly by the Oxford University Press.

Grants

LIVERPOOL

Professor J. K. Blass, £[illegible] SERC (electromagnetic [illegible] dustrial drives); Professor [illegible] £33,526 from SERC (permanent net machine); Professor C. [illegible] Vickers, £36,000 from Unilever Central Resources Ltd (design of [illegible] survey); Professor A. M. [illegible] ridge, £10,000 from Allen and [illegible] bury's Ltd (haemodynamic effects in untreated hypertension); Prof. A. M. Breckenridge, £1,000 from National Health and Medical Research Council, Australia (antifolate); Professor A. M. Breckenridge, £35,000 from Squibb Pharmaceuticals (non-invasive assessment of [illegible] hypertensive drugs); Dr R. D. [illegible] guyne, £55,458 from MRC (secretion from adrenal chromaffin cells); Dr D. Slade, £33,428 from the Leverhulme Trust (attitudes to and management of anorexia nervosa/bulimia nervosa); I. Ware, Dr D. W. Day and Dr [illegible] Newton, £13,774 from MRHA (for developing in operated stimulator); Dr J. Cole-Hamilton, £80,694 from SERC (MOCVD of Indium phosphide); Dr C. R. Vallance, £[illegible] from Royal Society (protein dysautonomia); Dr J. W. [illegible] £16,696 from MRC (bacterial protein and metabolism of connective tissue components in periodontal disease); Dr D. F. Williams, £42,150 from Simple (adhesive dental materials); Dr A. McVerry and Dr M. J. Rennie, £4,954 from MRHA (complement parameters in malignant disease); Professor J. M. Beazley, £10,000 from MRHA (maternal uterine and fetal blood vessel velocity waveforms Doppler ultra-sound); Dr J. Rooney, £7,995 from MRHA (glucose containing cells in health and disease); Professor R. Shields, £22,000 from Royal Liverpool Hospital (for computer network in surgical research); Professor C. Michael and Dr I. Young, £37,158 from SERC (studies at high energy physics); Dr R. [illegible] Professor A. D. Michael and Dr [illegible] Envot, £20,309 from SERC (pilot investigation of [illegible] dynamics); Professor H. R. Reed, £88,886 from MRC (peptidoglycan Neisseria gonorrhoeae); Dr I. [illegible] pan, £18,000 from SERC (peptide synthesis, amino acid analysis); Dr [illegible] Weightman and Professor C. E. [illegible] son, £8,000 from SERC (visiting lectureship on charge transfer, electron screening and hole state localisation in alloys and small molecules); Mr [illegible] J. Batey, Mr P. J. B. Brown and Mr [illegible] Madden, £[illegible] from the Lanarkshire Area Health Authority (for [illegible] allocation procedures).

BELFAST, QUEEN'S

Dr J. T. Patterson, £21,081 from Ministry of Agriculture, Fisheries and Food (spoilage and shelflife); Professor K. D. Buchanan, £13,881 from British Diabetic Association (sulphonylurea polypeptide in diabetic rat tissues).

The Accident Offices Association has been awarded a grant of £350,000 for a period 1984 to 1987 to the motor insurance studies unit of the University of Edinburgh to enable the unit to continue its research into various aspects of disability.

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Universities

UNIVERSITY OF ZIMBABWE

Applications are invited for the following posts:

PROFESSOR OF PRECLINICAL VETERINARY SCIENCE
The successful candidate will be an experienced teacher with an international reputation for scholarship in veterinary anatomy or physiology. He will be required to provide academic leadership in the Department of Preclinical Veterinary Studies which is responsible for the teaching of anatomy, histology, embryology, physiology, biochemistry and aspects of animal production in conjunction with the Faculties of Agriculture, Medicine and Science. He will be expected to play a major part in the development of the curriculum, the planning of courses and the initiation and supervision of research. He should have a degree in veterinary science.

LECTURESHIP/SENIOR LECTURESHIP/ASSOCIATE PROFESSORSHIP:
DEPARTMENT OF VETERINARY PATHOLOGY
The successful candidates will have a degree in veterinary science and should be registerable with the Council of Veterinary Surgeons in Zimbabwe. He should have relevant teaching and/or research experience. He will be required to teach general and special pathology to third and fourth year B.V.Sc. students and to assist in the provision of a diagnostic pathology service to the Faculty clinics.

LECTURESHIP/SENIOR LECTURESHIP/ASSOCIATE PROFESSORSHIP:
DEPARTMENT OF CLINICAL VETERINARY STUDIES
(6 posts)
Applicants should have a degree in veterinary science registerable with the Council of Veterinary Surgeons in Zimbabwe. To staff the Department of Clinical Veterinary Studies which will be established in 1988.
Successful candidates should have relevant teaching and/or research experience in one or more of the following disciplines: clinical medicine, surgery, radiology, anaesthesiology, ophthalmology, theriogenology, clinical pathology and epidemiology. They will be required to teach fourth and final year B.V.Sc. students and to assist in the Faculty clinics in the treatment of large and small animals.

LECTURESHIP/SENIOR LECTURESHIP/ASSOCIATE PROFESSORSHIP:
DEPARTMENT OF CURRICULUM STUDIES
(Biology)
The appointee will be required to teach Biology at B.Ed. level and to supervise Grad. C.E. students taking biology as a teaching option. He/she will also be required to monitor biology courses in teachers' colleges. An ability to teach curriculum theory at B.Ed., Dip.Ed. and M.Ed. levels will be an additional advantage. Applications should be limited teachers with at least an Honours degree (or better) in biological sciences. Postgraduate qualifications in curriculum theory will be an advantage.

SALARY SCALE:
(Non-Medical)
Lecturer: 2A9,936 x 432 - 15,120 x 468 - 15,588 x 480 - 816,548.
Senior Lecturer: 2$17,028 x 480 - $19,428.
Associate Professor: 2$17,508 x 480 - $19,908.
(Medical)
N.B. All Medical scales quoted below are inclusive of the Professional Supplement.
Lecturer: 2$14,868 x 432 - 15,120 x 468 - $16,668 x 480 - $19,908.
Senior Lecturer: 2$20,100 x 500 - 22,600 x 504 - $23,204.
Associate Professor: 2$20,700 x 500 - 22,600 x 504 - $23,608.
Professor: 2$24,000 x 324 - $25,620.

Appointment on above scales according to qualifications and experience.

Conditions of Service:
Both permanent and short-term contracts are offered. Persons who are not Zimbabwean citizens may be appointed only on a short-term contract basis with an initial contract period of two years. Short-term contracts may, in exceptional cases, be extended.
Six copies of applications
Giving full personal particulars (including full name, place and date of birth, etc), qualifications, employment and experience, present salary, date of availability, telephone number and names and addresses of three referees should be addressed to the: Director, Appointments Personnel, University of Zimbabwe, PO Box MP 167, Mount Pleasant, Harare, Zimbabwe, from whom further particulars are available on request.
Applicants should send an additional copy of their application to the Association of Commonwealth Universities (Appts), 36 Gordon Square, London WC1H 0PF, from whom further particulars also available.
Closing date for receipt of applications is 14 April 1984.

(14177)

THE UNIVERSITY OF SYDNEY

SENIOR LECTURER/ASSOCIATE PROFESSOR IN DEPARTMENT OF MEDICINE (THORACIC MEDICINE)
This is a new appointment established jointly with the Department of Medicine at the University of Sydney and the Section of Thoracic Medicine at Royal North Shore Hospital.
The appointee will hold the status of Visiting Medical Officer within the Department and be expected to fulfil a service role, having full access to the range of services available. On the retirement of the present occupant the appointee will be eligible for appointment as Head of Department.
The Royal North Shore Hospital is an 885 bed teaching hospital and encompasses all major specialty areas. Academic units are established in Surgery, Medicine, Obstetrics and Gynaecology, Orthopaedics and Psychiatry.
The specialist staff of the Department of Thoracic Medicine comprises one Staff Specialist and four Visiting Medical Officers utilising a 28 bed ward. Extensive laboratory facilities are operated by the Department and include both inpatient and outpatient investigations.
The Department also conducts an extensive outpatient clinic and together with the inpatient facilities functions as a referral unit for the Northern Metropolitan Region of Sydney serving a population of approximately 600,000 people.
20th April 1984.

SENIOR LECTURER/ASSOCIATE PROFESSOR — DEPARTMENT OF PSYCHIATRY (ROYAL NORTH SHORE HOSPITAL)
This is a new appointment established jointly by The University of Sydney, the Health Department of New South Wales and the Royal North Shore Hospital.
As Head of the Department of Psychiatry at the Hospital, the appointee will be responsible to the Hospital's Director of Medical Services for the provision of mental health services and the co-ordination of inpatient and community psychiatric services of the Lower North Shore Area.
The Royal North Shore Hospital is an 885 bed teaching hospital of The University of Sydney and incorporates a 19 bed inpatient unit providing acute admission facilities for the Lower North Shore Area. The appointee will be an community based care and a specific crisis intervention team works in association with other staff based at the hospital.
Another academic post of Lecturer/Senior Lecturer will be available to assist the successful candidate in undertaking academic and administrative duties.
It is expected that the appointee will undertake a major role in the provision of care, exhibit leadership in the co-ordination of the services and be responsible to the Head of the Department of Psychiatry for teaching, research and other academic duties. Interest in community psychiatry or psycho-geriatrics is desirable.
Conditions and salary are in accord with the Medical Officers'/Hospital Specialists (Staff) Award.
20th April 1984.

LECTURER IN DEPARTMENT OF PSYCHOLOGY
Applicants with specialist training in either Animal Learning or Psychological Statistics will be considered but preference will be given to those with joint expertise. Experience in the use of laboratory computers is desirable.
7th May 1984.

Salary ranges: Senior Lecturer/Associate Professor: $A30,686-$41,372 - plus a clinical loading of $A6,761. Lecturer $A23,394-$A30,764.
Appointments to Senior Lectureship/Lectureships are usually probationary for three years and the University reserves the right not to proceed with any appointment for financial or other reasons.
Applications, including curriculum vitae, list of publications and names of three referees to the Registrar, University of Sydney, NSW 2006, Australia, by the closing date stated, from whom further information is available.
Further general information also available from Association of Commonwealth Universities (Appts), 36 Gordon Square, London WC1H 0PF.
EQUAL EMPLOYMENT OPPORTUNITY IS UNIVERSITY POLICY

(14407)

THE CHINESE UNIVERSITY OF HONG KONG

invites applications for the post of

Senior Lecturer/Lecturer in Electronics

Applicants should have a relevant higher degree (preferably a Ph.D.) and research/industrial experience in one or more of the following fields: (1) Communications and Electromagnetics; (2) Computer applications/systems; (3) Digital control and (4) VLSI design/technology.

Annual Salary
Senior Lecturer: HK$211,200–283,740 by 8 increments;
Lecturer: HK$135,780–184,140 by 2 increments BAR HK$183,260–227,100 by 7 increments. Exchange rate approximately: US$1=HK$7.8, £1=HK$12. Commencing salary and grade will depend on qualifications and experience.

Conditions of Service
Benefits include sick leave, vacation leave, long leave with pay, superannuation (University 15%, appointee 5%), medical benefits, education allowance for children and housing allowance for those whose annual salary is HK$144,960 or above, and for appointees on overseas terms, passage benefits for themselves and their dependants as well.

Application Procedure
Applications should be made out in duplicate, giving full particulars, experience and the names and addresses of three persons to whom reference may be made, and sent together with copies of certificates/diplomas/testimonials and recent publications to the Personnel Section, The Chinese University of Hong Kong, Shatin, N.T. Hong Kong not later than *19th May 1984*. Please quote reference number 10/509/2/84 and mark 'Recruitment' on cover.

(14369)

HOMERTON COLLEGE
Cambridge

PRINCIPAL

The Board of Trustees invites applications for the post of Principal to succeed Miss Alison Shrubsole, CBE, MA, who is retiring at Easter 1985.

Homerton College specialises in the education and training of teachers. It is an Approved Society of the University of Cambridge and funded by DES as a voluntary college.

Salary within Burnham FE Group 8 Scale.

Details and application form are obtainable from the Clerk to the Trustees, Homerton College, Cambridge CB2 2PH, Tel: 0223-246831. Closing date for applications is 30th April, 1984.

(14368)

nihe limerick

LECTURER/ASSISTANT LECTURER IN PHYSICAL CHEMISTRY OR CHEMICAL ENGINEERING

A vacancy exists in the Department of Materials Engineering and Industrial Chemistry for a Lecturer/Assistant Lecturer in Physical Chemistry or Chemical Engineering.

The successful candidate will have a record of academic achievement together with research and/or industrial experience. As an important component of normal duties the person appointed will be expected to initiate research and liaise with industry. Expertise in one or more of the following areas is desirable:

1. Catalysis
2. Electrochemistry
3. Non-Aqueous solutions
4. Process design and control
5. Mass transfer

SALARY SCALES:
LECTURER ..... IR£13,474 - IR£18,607 p.a.
ASSISTANT LECTURER ..... IR£10,557 - IR£12,908 p.a.

Application materials available from the Personnel Office, The National Institute for Higher Education, Limerick, Ireland should be completed and returned by Friday, 13 April, 1984.

The University of Wales Aberystwyth
Department of Agricultural Botany

MAFF POSTGRADUATE STUDENTSHIP

Applications are invited from graduates in biochemistry, agricultural botany or plant pathology who expect to obtain at least a Second Class Honours degree in June 1984, successful candidates will work in a group under the supervision of Dr D. Gareth Jones and will study aspects of Pyrenophora brassicae and Alternaria brassicae in genotypes of oil seed rape.

Applicants are asked to send for the relevant form to the Registrar (Applications Office), The University College of Wales, Old College, Aberystwyth SY23 2AX.

Closing date for receipt of completed forms Wednesday 25th April 1984.

The University of Leeds
Department of Microbiology

LECTURER (Non-Clinical)

Applications are invited for the above post available immediately. Research interests in any aspects of plant or bacterial genetics or biochemistry of nitrogen fixation or resistance are required. Candidates will also be required to involve themselves in research problems within the department as well as to teach relevant aspects in the courses provided for medical and dental students and in the BSc Honours microbiology scheme.

Salary on the scale for lecturers £7,185–£14,185 (subject to review from 1st April 1984), according to age, qualifications and experience.

Application forms and further particulars may be obtained from The Registrar, The University, Leeds LS2 9JT, to whom completed forms should be returned as soon as possible. Please quote reference number 1/84 in all correspondence.

Closing date for applications 23rd April 1984.

(14370)

UNIVERSITY OF STRATHCLYDE
Strathclyde Business School

COURSE DEVELOPER

Applications are invited for the post of Course Developer (tenable for 3 years) in the new Flexible Management Development Programme sponsored by the Open Technical Unit of the Manpower Service Commission.

Applicants should be honours graduates, preferably with a higher degree in management/business studies or education; should have teaching experience at University level; should have interest in curriculum evaluation and development of self-instructional material; and must be able to work effectively with academic and support staff.

Salary on Grade II for Other Related Staff (£10,710–£14,126 pa). USS benefit.

Further particulars and application forms (quote ref: ORA/84) are available from Staff Office, University of Strathclyde, McCance Building, 16 Richmond Street, Glasgow G1 1XQ.

Closing date for applications: 20th April, 1984.

(14109)

Open University viewing

Saturday March 24

BBC1
6.30 Geneticx. (S299: prog 3).
6.45 Failure of Stressed Materials. Made without flaw. (T353: prog 2).
7.10 Photochemistry. Colour. (S341: prog 3).
7.35 Risk. The Gambler. (U201: prog 3).
8.00 Arts Foundation. Work and Retirement. (P252: prog 3).

BBC2
6.25 Ecology. Ecological Sampling. (S323: prog 4).
6.50 Materials Processing. Mineral Processing. (T352: prog 3).
7.15 Numerical Computation. Solving Linear Equations. (M351: prog 2).
7.40 Technology and Change 1750–1914. Sulphuric Acid. (A381: prog 3).
8.05 Education for Adults. The Wisconsin Idea. (E355: prog 1).
8.30* Arts Foundation Course. Interpreting a Dream. (A101: prog 6).
8.55 Materials Engineering. New Bearings for Old. (T252: prog 3).
9.20 Ethnic Minorities and Community Relations. Coloured in Reverse: 3, Inglan is a bitch. (E334: prog 4).
9.45 Popular Culture. British Cinema for the 1930s: Cinema. (U305: prog 3).
10.10* The Rise of Modernism in Music. Are my ears on wrong? A profile of Charles Ives. (A308: prog 3).
10.35 Personality and Learning. Josh's file. (E201: prog 4).
11.00 Inquiry. Non-Euclidean Geometry. (U202: prog 3).
11.25 Basic Science for Technology. Density and Viscosity. (T281: prog 2).
11.50* Computing and Computers. Data Structures. (M252: prog 2).
12.15 Special Needs in Education. A Dependent Future: Part II, a life of their own. (E241: prog 2).
12.40 Contemporary issues in education. Where Sunday Services. (E200: prog 12).
13.05 Introduction to Pure Mathematics. Multiplying Matrices. (M203: prog 7).
13.30 Research Methods. Wolverton for Pride; The Interview. (DE304: prog 5).
13.55 Fundamentals of Human Geography. Simple Ecosystems: Problems of Pollution. (D204: prog 4).
14.20 Theories of Music. Codapces. (A241: prog 2).
14.45* Modern Art and Modernism. Van Dogh: rooted in the soil. (A315: prog 5).

RADIO 3 (VHF)
7.25 Introduction to Calculus. What is a function? (M5283: prog 2).
22.20* Arts Foundation Course. Studying Literature. (A101: prog 6).
23.40 The Nineteenth Century Novel. Melodrama. (A312: prog 4).

Sunday March 25

BBC1
6.30 Geology. Mapping in the Yorkshire Dales. (S356: prog 3).
6.40 Science and Society. Elementary Process: Reefs and Evaporites. (S335: prog 6).
7.15* Engineering Mechanics. Thermoplastic & Energy, Circuit and Shielding Cycles. (T333: prog 2).
7.30 Electrical Engineering and Taxation. Ethical Issues A profile of a Surveyor/Part 2 (T355: prog 2).
8.00 Telecommunication Systems. Transmission Lines. (T341: prog 4).
8.25 The Nature of Chemistry. Dynamic Aspects of MMR. (S304: prog 9).

BBC2
8.25 Principles of Chemical Processes. Electrolytic Chlorine Cells. (T294: prog 4).
8.50 Systems Behaviour. A question of control. (T241: prog 2).
9.15 Understanding Space and Time. A feel for space. (S354: prog 4).
9.40 Open Forum. Applicant Advisory Service. Addendum to the OU explained. (D305: prog 4).
10.05 Social Psychology. Cognitive Maps. (D305: prog 4).
10.30* Science Foundation Course. Spreading Oceans. (S101: prog 7).
10.55 Social Sciences Foundation Course. The end of the line? (D102: prog 8).
11.20 Maths Foundation Course. Classifying Cubics. (M101: prog 6).
11.45 Purpose and Planning in the Curriculum. North Westminster Community School. (E204: prog 5).
12.10 Seventeenth Century England. Women Before Women (without Masque). (A203: prog 4).
11.00* Systems Organization. The Management of Complexity. (T243: prog 5).
11.25 An Introduction to Sociology. Home: Castle or Cage? 1 (D207: prog 3).
11.50 Biology: Form and Function. Allostery. (S202: prog 7).
12.15 The Earth's Physical Resources. Clays (S236: prog 4).
12.40* The Nineteenth Century Novel and its Legacy. Charles Dickens: Childhood in Victorian literature. (A312: prog 3).
13.05 Inorganic Chemistry: Concepts & Case Studies. Crystals. (S247: prog 3).
13.30 Mathematical Models and Methods. Resonance and Damping. (M5204: prog 8).

RADIO 3 (VHF)
6.55 Modern Art and Modernism. Peasants: Fred Orton and Griselda Pollock. (A315: prog 8).
7.15 Personality and Learning. Behaviour Modification: Theory Applied. (E201: prog 7).
7.35 Social Sciences Foundation Course. Mapping Programme 2. (D102: prog 4).

RADIO 4 (VHF)
6.45* Industrial Relations. Newspapers and Technological Change. (T281: prog 3).
7.05 Shakespeare. Acting Cleopatra. (A361: prog 3).
7.25 Contemporary Issues in Education. Education and Society. (E200: prog 5).

Monday March 26

BBC2
6.55* Elements of Music. Cadences. (A241: prog 2).
7.20 Photochemistry. Colour. (S341: prog 3).
7.45 Mathematics Foundation Course. Classifying Conics. (M101: prog 7).
8.10 Ecology. Ecological Sampling. (S323: prog 4).
8.35 Materials Processing. Mineral Processing. (T352: prog 3).
9.00 Programme to be announced later.
9.25 Shakespeare. Antony and Cleopatra (A361: prog 6).
9.50 Fundamentals of Human Geography. Simple Ecosystems: Problems of Pollution. (D204: prog 4).

RADIO 3 (VHF)
6.15 Social Psychology. The Framework of Society (D305: prog 4).
6.35 Arts Foundation Course. Reading in Bottom Gear. (A101: prog 7).
23.20 Man's Religious Quest. The Hindu Temple (AD308: prog 6).
23.40* Introduction to Calculus. What is a Function (M5283: prog 2).

RADIO 4 (VHF)
23.30 The Control of Education in Britain. Failing Schools Rule. (E222: prog 2).
23.50* Organic Chemistry. Feedback to CMA 41. (S246: prog 1).

Tuesday March 27

BBC2
6.05 Modern Art and Modernism. Seurat. (A315. prog 7).
6.30* Technology and Change 1750 to 1914. Sulphuric Acid (A381: prog 3).
6.55* Biology: Form and Function. Allostery. (S202. prog 7).
7.20 Science Foundation Course. Energy: A Question of Balance. (S101: prog 8).
7.45* Genetics. Meiosis (S299: prog 3).
12.00 Programme to be announced later.
23.30* Personality and Learning. Josh's File. (E201: prog 4).

RADIO 3 (VHF)
6.15* The Nineteenth Century Novel. Melodrama. (A312: prog 4).
6.35 Risk. The Risks of Risk Assessment. (U201: prog 3).
23.20 The Enlightenment. Political Prints in the Age of Hogarth. (A204: prog 7).
23.40 Arts in Italy. Portraiture. (A352: prog 2).

RADIO 4 (VHF)
23.30 Open Forum – ?. Information programme for OU students.

Wednesday March 28

BBC2
6.55* Inorganic Chemistry: Concepts & Case Studies. Crystals. (S247: prog 3).
7.20 Arts Foundation Course. Looking at Poems. (A101: prog 7).
7.45* Ecology and Sedimentary Processes: Reefs and Evaporites. (S335: prog 6).
12.55 Micros in Schools. The Blackboard. Expert. (T343: prog 4).
17.10* Special Needs in Education. A dependent future: Part II, A Life of their own. (E241: prog 2).
23.30* Numerical Computation. Solving Linear Equations. (M351: prog 2).
23.55* Inquiry. Non-Euclidean Geometry. (U202: prog 3).

RADIO 3 (VHF)
6.30* Social Sciences Foundation Course. Mapping Programme 2. (D102: prog 4).
23.40 Instrumentation Magnetic Circuit. (D307: prog 3).

RADIO 4 (VHF)
23.30 The Romantic Poets Ballads. Folksong and the Romantics (A362 prog 2).
23.50* Contemporary Issues in Education. Education and Society. (E200: prog 5).

Thursday March 29

BBC2
6.05* Introduction to Pure Mathematics. Multiplying Matrices. (M203. prog 7).
6.30* Purpose and Planning in the Curriculum. North Westminster Community School. (E204 prog 5).
6.55* The Earth's Physical Resources. Clays (S236: prog 4).
7.20* Social Sciences Foundation Course. The end of the line? (D102: prog 8).
7.45* Nature of Structural Materials. Made without flaw (T353: prog 3).
12.45 Micros in Schools. Microcomputers in the classroom (P542. prog 1).
17.10* Risk. The Gambler. (U201: prog 3).
23.30* Basic Science for Technology. Density and Viscosity. (T281 prog 2).
23.55* Social Psychology Cognitive Maps (D305 prog 4).

RADIO 3 (VHF)
6.15* The Control of education in Britain. Failing Schools Rule. (E222: prog 2).
6.35* Arts in Italy. Portraiture (A352: prog 2).
23.20* Modern Art and Modernism. Peasants: Fred Orton and Griselda Pollock (A315 prog 8).
23.40 Art and Environment. Radon or Eden? (TAD292. prog 10).

RADIO 4 (VHF)
23.30 Maths Foundation Course. Foundations (M101 prog 3).
23.50* Shakespeare. Acting Cleopatra. (A361 prog 2)

Friday March 30

BBC2
6.05* Mathematical Models and Methods. Resonance and Damping (M5204: prog 8).
6.30* An Introduction to Sociology. Home: Castle or Cage? 1. (D207: prog 3).
6.55* Systems Behaviour. A Question of Control. (T241: prog 2).
7.20* Understanding Space and Time. A feel for space. (S354: prog 4).
7.45* Principles of Chemical Processes. Electrolytic Chlorine Cells (ST294. prog 4).
12.55 Micros in Schools. Quality Software? (M5211: prog 2).
17.05 Weekend Outlook – 8.
17.10 Man's Religious Quest. The Hindu Temple (AD308: prog 6).
6.35* The Enlightenment. Political Prints in the Age of Hogarth. (A204: prog 7).
23.20* Shakespeare. Antony and Cleopatra (A361: prog 6).
23.40 Instrumentation Magnetic Circuit. (D307: prog 3).

RADIO 4 (VHF)
23.30 The Romantic Poets Ballads. Folksong and the Romantics (A362 prog 2).
23.50* Contemporary Issues in Education. Education and Society. (E200: prog 5).

Universities continued

UNIVERSITY OF EDINBURGH

The Coca-Cola Retail Research Foundation Fellow

The COCA-COLA RETAIL RESEARCH FOUNDATION has been set up jointly by the Coca-Cola Export Corporation and the University of Edinburgh to undertake a programme of research into various aspects of international grocery retailing.

The RESEARCH FOUNDATION FELLOW will be responsible for:

- creating a data bank of secondary information on international grocery retailing
- carrying out studies on various aspects of the industry and writing analytical reports for publication
- setting up and running workshops and designing teaching material.

The successful applicant will have

- management experience in a major grocery retailer, or as a consultant in an agency involved in the industry
- a good degree in a relevant subject.

The appointment is for a period of three years and a starting salary of c. £10,000 is envisaged.

Please apply with full career details to Mr. M. H. Weber, Director, The Coca-Cola Retail Research Foundation, Centre for Industrial Consultancy and Liaison, University of Edinburgh, 16 George Square, Edinburgh EH8 9LD not later than 13th April, 1984.

Telephone enquiries – 031 667 1011 Ext. 6823 or 2451.

PLEASE QUOTE REFERENCE NO. 5152 (14104)

UNIVERSITY OF SALFORD
DEPARTMENT OF MATHEMATICS

RESEARCH ASSISTANT

Applications are invited for the above post, part of a programme for the development of algorithms and computer programs for the prediction of three dimensional steady and unsteady flow fields. Candidates should have a good honours degree in mathematics or engineering. Knowledge of FORTRAN useful and experience in computational fluid dynamics, particularly in the areas of grid generation and finite difference methods, an advantage.

The appointment will be on the salary range IB attracting £6,810 per annum. The post is tenable for one year in the first instance and is open from 1 May 1984. Suitably qualified applicants may register for a higher degree.

Application forms obtainable from the Registrar, University of Salford, Salford M5 4WT (Telephone 061–736 5843, ext. 215), to whom completed application forms should be returned by 13 April 1984 quoting reference MA/174. (Informal enquiries may be made to Mr. P. Caine, ext. 687). (14107)

UNIVERSITY OF BRADFORD

Lectureship in Pharmaceutical Technology

"New Blood" Post
(Re-advertisement)

Applications are invited from PHARMACISTS, CHEMISTS, BIO-PHYSICISTS, OR CHEMICAL ENGINEERS for a permanent appointment, available immediately, and funded under the U.G.C. "New Blood" initiative in which the primary role in the initial years will be to contribute to the work of the research team led by Professor B. W. Barry. Applicants should normally possess a Ph.D. in the pharmaceutical sciences or relevant discipline (such as physical or colloid chemistry, biophysics or chemical engineering), and have a keen interest in applying physical pharmaceutical principles to problems relating to fundamental investigations on (a) the release and absorption of drugs from dosage forms, (b) novel drug delivery systems (c) colloidal aspects of drug aggregation. Salary will be on the Lecturer scale £7,190–£14,125 pa. Further particulars and application forms obtainable from the Personnel Secretary, Post Ref: PT/NBT/H, University of Bradford, West Yorkshire BD7 1DP. Closing date 13th April 1984. (14106)

University of Birmingham
Department of Social Administration

TEMPORARY LECTURER IN SOCIAL ADMINISTRATION

From 1st October 1984, or such earlier date as may be negotiated for one year.

To teach undergraduate and postgraduate courses in Social Policy, and contribute to courses at a more advanced level. An interest or expertise in Family and Child Welfare and Social Security would be an advantage.

The appointment will be on the Lecturer Scale, the point to be determined upon age and experience. Further details and application forms from: The Assistant Registrar (Commerce), The University, Birmingham, B15 2TT. Tel: 021-472 1301 Ext. 2424 (24 hr answ/m) or 021-472 1434 (direct line). Completed forms should be returned by 20 April 1984 quoting reference C/SS/83/H. H1

University of Glasgow
SENIOR LECTURESHIP IN ANAESTHESIA

Applications are invited for a Senior Lectureship within the University Department of Anaesthesia. The post will be tenable at the Western Infirmary, Glasgow and the duties will include undergraduate teaching. Salary will be fixed according to placement on the University scale for clinicians, up to the maximum on the Senior Lecturer scale (£9,330 with effect from 1st October 1984) with honorary status (Consultant Grade). Appropriate clinical grading will be sought within the Greater Glasgow Health Board.

Candidates must have a Fellowship of the Faculty of Anaesthetists or equivalent qualification and will be expected to have considerable experience of teaching and research in the field. The successful candidate will participate in undergraduate teaching and in clinical laboratory work. Appropriate support for undergraduate teaching, the resources of the University Department of Anaesthesia and the Regional Department of the Head of Department.

Further particulars may be obtained from the Academic Registrar, University of Glasgow, Glasgow G12 8QQ, to whom applications (12 copies) giving the names and addresses of two referees should be sent by 31st March 1984. (14105)

University of Durham
Department of Modern History

Applications are invited for a

TEMPORARY LECTURESHIP IN MODERN HISTORY

for three years from 1st October 1984. Candidates should have a special interest in 20th-century British History.

The salary will be on the lecturer scale £7,190–£14,125 p.a.) together with normal pension arrangements.

Applications (three copies), including the names of two referees, should be submitted not later than 27th April 1984 to the Registrary and Secretary, Old Shire Hall, Durham DH1 3HP, from whom further particulars may be obtained. H1

University of Oxford
Ruskin College
requires a

TEMPORARY TUTOR IN ECONOMICS

for one academic year in the first instance. The appointee will be expected to teach a full range of material for all intending teachers. There is also a part-time diploma course in social education and other in-service courses.

The successful candidate will have substantial and relevant experience and qualifications.

University of Birmingham
Westhill College

Weoley Park Road, Selly Oak, Birmingham, B29 6LL
An Affiliated College of the University of Birmingham

PRINCIPAL LECTURER IN SPECIAL EDUCATION (MENTAL HANDICAP)

Applications are invited for appointment, with effect from 1st September 1984, to this post which, as Head of the Subject, involves leadership of the team of tutors teaching the main subject Mental Handicap in the B.Ed. Certificate in Education and other professional work in the training of teachers of mentally handicapped children. Increasing responsibility is also developpint for the coverage of special education needs in post-Warnock terms, for small tutorial teaching areas. There is also advanced diploma work in special education and other in-service courses.

The successful candidate will have substantial and relevant experience and qualifications.

TEMPORARY LECTURER II IN RELIGIOUS AND THEOLOGICAL STUDIES

To offer Religion and Social Studies main subject and professional work in the B.Ed. degree. Relevant teaching experience in Primary and/or Secondary schools is sought.

TEMPORARY LECTURER II IN ENGLISH

To offer Language and possibly Literature in the main subject and professional courses in the B.Ed. degree. Relevant teaching experience in Primary and/or Secondary schools is sought.

Further particulars may be obtained from the Academic Personnel Office, University of Glasgow, Glasgow G12 8QQ, where applications (8 copies), giving the names and addresses of not more than three referees, should be lodged on or before 24th April, 1984.

In reply please quote Ref. No. 3180/H1. H1

University of Liverpool
Ph.D. STUDENTSHIP IN PHYSICS

Applications are invited for a studentship in the Department of Physics. The successful applicant will be expected to register for a Ph.D. and to undertake research in electron spectroscopy under the supervision of Dr. P. Weightman. The research will be part of a collaborative programme between the Department of Physics, University of Liverpool and the Physics Chemistry Department of the University of Groningen, The Netherlands and is aimed at study by the Commission of the European Communities.

Applications, together with the names of two referees, should be submitted not later than 30th April 1984 to the Registrar, The University, P.O. Box 147, Liverpool L69 3BX. Quote ref. RV/854/THES. H1

University of Oxford
READERSHIP IN HUMAN PHYSIOLOGY

The electors intend to proceed to an election to the Readership in Human Physiology which is now vacant on the retirement of the Readership is on the scale £13,875 to £16,995 per annum. It is intended that the appointment should be held in conjunction with a college fellowship.

Applications (ten copies, or, from abroad, seven copies) should be sent to the Secretary to the Electors, Mrs. J. Bowers, Examination Schools, High Street, Oxford OX1 4BG, from whom further particulars may be obtained. Applications should be received not later than 4 May 1984. (14102)

University of Cambridge
University Office : Vacancy

UNIVERSITY LECTURER IN THE FACULTY OF DIVINITY

University Lecturer to teach the religious literature of the Old Testament and the Intertestamental period and Hebrew up to the M.Phil standard, to take up appointment on 1st October 1984 or as soon as possible thereafter. The appointment will be for three years, with the possibility of reappointment to the retiring age.

The pensionable scale of stipend, for persons not ordinarily resident in College, is £8,673 a year rising to eleven annual increments to £15,083. There is no grade of Senior Lecturer.

Further information may be obtained from the Secretary of the Appointments Committee for the Faculty of Divinity, the Divinity School, St John's Street, Cambridge CB2 1TW to whom candidates should send their applications (ten copies), giving details of qualifications, experience, specific areas of teaching offered, and curriculum vitae, together with the names of not more than three referees, so as to reach him by 25th April 1984. H1

University of Durham

SENIOR DEMONSTRATOR IN COMPUTING

Applications are invited from graduates with relevant experience for appointment as Senior Demonstrator in Computing in the Department of Mathematical Sciences for three years from 1st October 1984. The duties will be to assist with the teaching of PASCAL programming and with the supervision of practical work for first year classes.

Initial salary in the range £6,510–£8,530 p.a. on National Grade 1A or 1B, plus superannuation.

Applications (3 copies) naming three referees should be sent by 16th April to the Registrar and Secretary, Old Shire Hall, Durham DH1 3HP, from whom further particulars may be obtained. H1

University of Glasgow
Computing Service

SYSTEMS PROGRAMMER

Applications are invited for a Systems Programmer to join the Mainframe section of the University's Computing Service. The work requires a keen interest in, and operational experience of, the fundamentals of the VAX operating system, and will involve both day-to-day maintenance and long term development activities. The appointment will be on the scale IA/Grade II of the national Officer Related Scheme, currently £7,190–£11,875/£11,160–£14,125 from next revision w.e.f. 1st April, 1984).

Applicants should be in the possession of a good honours degree (or equivalent) and will be expected to show that they be able to acquire, an in-depth knowledge of the VAX operating system.

Further particulars may be obtained from the Academic Personnel Office, University of Glasgow, Glasgow G12 8QQ, where applications (8 copies), giving the names and addresses of not more than three referees, should be lodged on or before 24th April, 1984.

In reply please quote Ref. No. 3180/H1. H1

University of Oxford
Computing Service

SYSTEMS PROGRAMMER

Applications are invited for a Systems Programmer to join the Mainframe section of the University's Computing Service. The work requires a keen interest in, and operational experience of, the fundamentals of the VAX operating system, and will involve both day-to-day maintenance and long term development activities. The appointment will be on the scale IA/Grade II of the national Officer Related Scheme, currently £7,190–£11,875/£11,160–£14,125 from next revision w.e.f. 1st April, 1984).

Applicants should be in the possession of a good honours degree (or equivalent) and will be expected to show that they be able to acquire, an in-depth knowledge of the VAX operating system.

Further particulars may be obtained from the Academic Personnel Office, University of Glasgow, Glasgow G12 8QQ, where applications (8 copies), giving the names and addresses of not more than three referees, should be lodged on or before 24th April, 1984.

In reply please quote Ref. No. 3180/H1. H1

University of Oxford
Keble College

APPOINTMENT OF PROFESSOR OF LAW

Applications are invited for the Chair of Law which became vacant following the appointment of Professor D. C. Jackson as Vice-President of the Immigration Appeals Tribunal. Applicants may have specialised interests in any branch of legal studies.

Further details may be obtained from the Secretary and Registrar, The University, Southampton, SO9 5NH, to whom applications (9 copies from applicants in the U.K.) should be sent before 14 May 1984. (14101)

University of Edinburgh
Faculty of Law

SALVESEN CHAIR OF EUROPEAN INSTITUTIONS

Applications are invited for the Salvesen Chair of European Institutions, tenable from 1 October 1st, 1984 or such later date to be agreed.

The Salvesen Professor is also be Director of the Centre of European Government Studies. The appointment is full-time and the holder will be expected to reside within the Professorial area.

Further particulars may be obtained from the Secretary, University of Edinburgh, 10 Buccleuch Place, South Bridge, Edinburgh EH8 9LN, with whom applications must be lodged by 27th April 1984.

Please quote reference 13/83 H1

University of Warwick

LECTURESHIP IN OPERATIONAL RESEARCH

Applications are invited for a Lectureship in Operational Research in the School of Industrial and Business Studies. The post is tenable for 1st October, 1984. Applicants should have experience of work within organizations, preferably in the public sector, as well as appropriate academic qualifications. The successful candidate will teach on undergraduate, graduate and post-experience programmes in the fields of Operational Research and Quantitative Methods. He will be expected to undertake and develop the School's existing research into public service OR. Salary: the Lecturer scale £7,190–£14,125 pa. Further particulars and application forms from the Registrar, University of Warwick, Coventry CV4 7AL, quoting Ref. No. 83/AM. Closing date for receipt of applications is 30th April 1984. H1

University of Bradford

FELLOW IN THEATRE (FIXED TERM)

Applications are invited from candidates with professional training and experience for a one-year Research Fellow in Theatre Arts from 1 September, 1984 (or earlier) in conjunction with a post in Music, the Fellow responsible for organising practical activity among undergraduate students in the Department, for co-operation with professional theatrical institutions in the region, for organising visits of professional artists, and for offering an opportunity for personal creative work within the range £7,190–£11,875 pa.

Further particulars and application forms from the Personnel Officer, University of Bradford, West Yorkshire BD7 1DP (Tel: 27466). Closing date 30 April 1984. H1

University of St Andrews
Department of Pure Mathematics

Applications are invited for

TEMPORARY LECTURESHIP

in the Department of Mathematics from 1 October 1984 to 31 October 1985. Candidates should be Ph.D. or preferably in the branch of analysis.

Salary at appropriate point within the range £7,190–£11,875 per annum plus superannuation.

Further particulars and application forms (two copies) obtainable from the Vice-Chancellor, University of St Andrews, Fife KY16 9AJ, to whom applications (12 copies), with the names of three referees, should be sent by 21 April 1984. H1

University of Southampton

EXTERNAL RELATIONS OFFICER

Applications are invited from suitably qualified persons for the post of External Relations Officer responsible to the University Secretary for maintaining and developing the University's relations with its graduates. The successful candidate will be expected to have the ability to explain clearly and effectively the work and aims of the University to a wide variety of audiences, a flair for writing and experience of publishing is essential.

The salary for the post will be £8,000–£9,000 per annum. It is likely that the successful candidate will be in the age range 30–40 and will have graduate status.

Further particulars and application forms may be obtained from the Personnel Office, The University, Southampton SO9 5NH (Tel: 559122 Ext. 2058). Closing date for receipt of applications 30th April 1984. H1

University of Cambridge
Geography Tripos

TEMPORARY LECTURESHIP IN GEOMORPHOLOGY

Applications are invited for a temporary lectureship in Geomorphology for the academic year 1984–85. The successful candidate will be expected to undertake undergraduate teaching in Geomorphology and to supervise undergraduate dissertations. Applicants should have a first degree in Geography or a related subject and a Ph.D. or equivalent research experience.

Salary will be on the Lecturer scale £7,190–£14,125 per annum.

Applications (six copies) should be sent by 31st March 1984 to the Secretary, Faculty of Geography, Downing Place, Cambridge CB2 3EN, from whom further particulars may be obtained. H1

University of Oxford
Ruskin College

TEMPORARY TUTOR IN ECONOMICS

for one academic year in the first instance. The appointee will be expected to teach a full range of material for all intending teachers. There is also a part-time diploma course in social education and other in-service courses.

The successful candidate will have substantial and relevant experience and qualifications.

Universities continued

University of Warwick
Department of Sociology

POSTGRADUATE STUDENTSHIP IN THE SOCIAL SCIENCES

Franco-British Programme

The E.S.R.C. has four to six graduate studentships for students intending to conduct a significant part of their research in France linked to a research team in the CNRS.

The Department of Sociology at Warwick has been awarded a grant to carry out a collaborative research programme into the social implications of unemployment in Coventry and Rouen. This programme will focus on work attitudes, family and community structures, ethnic relations and political culture. It intends to apply for graduate studentship linked to this programme.

Applicants are welcome from different disciplines, but prospective students should have an academic background relevant to the programme and a knowledge of French.

For further details and an application form, please write to The Secretary for Graduate Studies, Department of Sociology, University of Warwick, Coventry, CV4 7AL. Closing date for applications is 2nd April, 1984. H1

University of Oxford
Delegacy of Local Examinations

ASSISTANT TO THE SECRETARIES/ ASSISTANT SECRETARY IN CHEMISTRY

The Delegates invite applications from persons with graduate qualifications in Chemistry for a post which will be largely but not exclusively concerned with the Delegacy's GCE examinations at Ordinary and Advanced Levels, and with future examination developments. Applicants must have had two years of post teaching experience is essential.

The post will become available in Autumn 1984. The terms of appointment (Assistant to the Secretaries to the Delegacy/Secretary, and Assistant Secretary) and salary (£7,190 to £15,985), with which is associated a USS pension scheme, will be those of the Professional Officers' Scale.

Further particulars and application forms (to be returned by 14th April) may be obtained from the Secretary of Local Examinations, Ewert Place, Summertown, Oxford OX2 7BZ (Tel: 54291 Ext. 205). H1

University of Sydney

SENIOR LECTURESHIP (FIXED TERM)

In Department of Medicine (Cardiology)

Applications are invited for the position of Chapman Fellow and Senior Lecturer in Cardiology. Applicants should be qualified clinical cardiologists with experience in angiography.

Salary range: Senior Lecturer $A31,280 – $34,585 pa plus clinical loadings of $A8,781 pa.

The appointment will be for an initial period of five years with the possibility of renewal for a further five years after review. The University will assist the successful candidate to proceed with any appointment for financial or other reasons.

Applications, including curriculum vitae, list of publications, names of three referees, to Dr. Ian Hamilton, Registrar, University of Sydney, NSW 2006, Australia, by 30 April 1984. Further information may be obtained from: Mrs. Whom, Further particulars is also available from Association of Commonwealth Universities (Appts), 36 Gordon Square, London WC1H 0PF. Quote reference number 84/A/1. H1

University of Oxford
Keble College

ROLLS-ROYCE JUNIOR RESEARCH FELLOWSHIP

The College proposes to appoint a Research Fellow in Engineering Science for a period of 2 years, from October 1984, or as soon as possible thereafter, in the field of interest to Rolls-Royce Ltd. These may be in the Rolls-Royce programmes in Oxford on the thermodynamics and dynamics of turbomachinery, and associated instrumentation.

Candidates should be in the age range 24–30 and have a doctorate or have equivalent research experience. The annual stipend will be in the range £7,190 – £8,875, plus additional benefits.

Further details may be obtained from the Warden, Keble College, Oxford OX1 3PG. Applications should be received not later than 18 April 1984. H1

University of Oxford
Keble College

EPA JUNIOR RESEARCH FELLOWSHIP

The College proposes to appoint a suitably qualified candidate (normally in the age range 24–30) to an EPA Junior Research Fellowship in connection with the Rolls-Royce Ltd. Project in Computational Fluid and/or Chemical Sciences, tenable for two years from 1 October 1984. The stipend of a Salary in the range of £7,190 – £8,875 per annum with £2,480 on the retirement allowance, plus additional benefits. The Fellowship is tenable in other cases, but in these cases the stipend will be adjusted to the appropriate point on the scale. Candidates should be in the age range 24–30 and have a doctorate or have equivalent research experience. Applications (nine copies, or one from overseas), naming three referees, should be received not later than 6 May 1984 from the Warden, Keble College, Oxford OX1 3PG. Please quote Ref. No. 3180/H1. H1

University of Warwick

LECTURESHIP IN PHYSICS

Applications are invited from suitably qualified candidates with a good research record for a Senior Lectureship in the Department of Economics which teaches undergraduate and graduate courses in Economics, Econometrics and Economic History.

The salary for Senior Lecturers is on a scale from NZ$27,083 to $30,127 (tax); to $34,587 per annum and for Lecturers is on a scale from NZ$21,560 to $25,580 per annum.

Further particulars and Conditions of Appointment may be obtained from the Association of Commonwealth Universities (Appts), 36 Gordon Square, London WC1H 0PF, or from the Appointments Unit, Secretary's Office, University of Hong Kong, Hong Kong.

Closing date: 27th April 1984. H1

University of Canterbury
New Zealand
Department of Economics

SENIOR LECTURESHIP OR LECTURESHIP

Applications are invited from suitably qualified candidates with a good research record for a Senior Lectureship in the Department of Economics which teaches undergraduate and graduate courses in Economics, Econometrics and Economic History.

The salary for Senior Lecturers is on a scale from NZ$27,083 to $30,127 (tax); to $34,587 per annum and for Lecturers is on a scale from NZ$21,560 to $25,580 per annum.

Further particulars and Conditions of Appointment may be obtained from the Association of Commonwealth Universities (Appts), 36 Gordon Square, London WC1H 0PF, or from the Appointments Unit, Secretary's Office, University of Hong Kong, Hong Kong.

Closing date: 27th April 1984. H1

University of London
The London School of Economics and Political Science

LECTURESHIP IN LAW

Applications are invited for appointment from 1 October 1984 to a lectureship in Law.

Appointment will be on the salary scale for a Lecturer of £7,190–£14,125 per annum plus £1,186 per annum London Allowance. In assessing the starting salary, consideration will be given to qualifications, age and experience.

Application forms and further particulars are available, on receipt of a stamped, addressed envelope, from the Administrative Officer, Room A.S.16, The London School of Economics, Houghton Street, London WC2A 2AE, to whom completed applications should be returned by Tuesday, 8 May 1984. H1

The University of Manchester

LECTURER AND TEMPORARY LECTURER IN ACCOUNTING

Applications are invited for these posts (tenable from October 1984) in accounting studies, professionally qualified accountants and others with relevant industrial or commercial experience are particularly welcome. Qualification is required and applicants with interests in one of the following areas will be considered: financial accounting; management accounting; information systems; financial organisational behaviour; taxation; auditing.

Salary within range: £7,190 – £14,125 as according to age, qualifications and experience. Superannuation.

Application forms (returnable for April) and further information from the Registrar, University of Manchester M13 9PL. Quote Ref. 80/84/THES. H1

Heriot-Watt University
Department of Mathematics

TEMPORARY LECTURESHIP

Applications are invited for a lectureship, possibly at senior level, in the Department of Mathematics for the session 1984/85. Undergraduate teaching involves all aspects of mathematics, engineering and science and it will be an advantage to have research interests relating to those of existing staff in the Department.

Salary will be on the Lecturer scale £7,190–£14,125 per annum (or in the case of a senior appointment within the range of £13,215–£16,995 per annum).

Application forms and further particulars are obtainable from the Staff Office, Chambers Street, Edinburgh EH1 1HX, quoting reference number 84/84, to whom completed forms should be returned by 24th April, 1984. H1

The University of Manchester

LECTURERS IN GERMAN

Applications are invited for two posts, following the appointment of Dr. Raymond Furness to the Chair of German at the University of Reading, and Dr. Ritva Williams to the Chair of Finnish in the University College of Swansea. Candidates should have suitable qualifications in the field of twentieth-century literature or German philology and linguistics. The posts are tenable from October 1st 1984 or January 1st 1985 at £7,190–£14,125. Superannuation. Applications (six copies) should be sent by 24 April 1984 to the Registrar, The University, Manchester M13 9PL, from whom further particulars may be obtained. Please quote Ref. 79/84/THES. H1

University of Hong Kong

LECTURESHIP IN PHYSICS

Applications are invited for a Lectureship in Physics. Applicants should have PhD degree in Physics and be carrying out active research in a field of physics related to existing departmental interests. Preference will be given to candidates with research experience in theoretical or experimental solid state physics.

Annual salary (superannuable) is on an 11-point scale: HK$155,760 – HK$237,100 (£11,910–£19,921 approx.) (sterling equivalent as at March 2nd, 1984). Starting salary will depend on qualifications and experience.

At current rates, salaries tax will not exceed 15% (expected to increase to 17½) of gross income. Housing benefits at a rental of 7½% of salary. Children's education allowances, leave and medical benefits are provided.

Further particulars and application forms may be obtained from the Secretary General's Association of Commonwealth Universities (Appts), 36 Gordon Square, London WC1H 0PF, or from the Appointments Unit, Secretary's Office, University of Hong Kong, Hong Kong.

Closing date: 27th April 1984. H1

University of London
The London School of Economics and Political Science

LECTURESHIP IN SOCIAL PHILOSOPHY

Applications are invited for appointment from 1st October 1984 to a lectureship in Social Philosophy, in the Department of Philosophy. Applicants should have a good honours degree in economics, philosophy or a related subject and should have suitable qualifications in the field of twentieth-century literature or German philology and linguistics. The posts are tenable from October 1st 1984 or January 1st 1985 at £7,190–£14,125. Superannuation. Applications (six copies) should be sent by 24 April 1984 to the Registrar, The University, Manchester M13 9PL, from whom further particulars may be obtained. Please quote Ref. 79/84/THES. H1

The University of Manchester

LECTURERS IN GERMAN

Applications are invited for two posts, following the appointment of Dr. Raymond Furness to the Chair of German at the University of Reading, and Dr. Ritva Williams to the Chair of Finnish in the University College of Swansea. Candidates should have suitable qualifications in the field of twentieth-century literature or German philology and linguistics. The posts are tenable from October 1st 1984 or January 1st 1985 at £7,190–£14,125. Superannuation. Applications (six copies) should be sent by 24 April 1984 to the Registrar, The University, Manchester M13 9PL, from whom further particulars may be obtained. Please quote Ref. 79/84/THES. H1

The Papua New Guinea University of Technology

Department of Fisheries

LECTURER/SENIOR LECTURER (FISHING GEAR TECHNOLOGY)

Applications are invited for the above position in the Department of Fisheries.

Applicants must have a PhD in Fisheries or related disciplines or an MSc in Fisheries Technology, or a first degree with considerable post-graduate experience in Fishing Methods, Fishing Gear Technology and Fishery Resources. Preference will be given to candidates with research experience in theoretical or experimental solid state physics.

The appointee will be responsible for teaching (but not limited to) undergraduate stream of Fishing Gear Technology in the University and should be familiar with most aspects of the following subjects: Fisheries Gear Design and Development, Fishing Gear Application, Fishing Vessel Design, Operation and Machinery Systems and, preferably, fishing trials and operation.

The appointment is expected to commence 1 July 1984.

Salary: Lecturer K16,920 – K19,670 per annum, Senior Lecturer K20,220 per annum (K1 = £0.7849 approx). Level of appointment will depend upon qualifications and experience.

The initial contract period is for approximately three years. Other benefits include a gratuity of 25% based on 3% appointment and repatriation fares; leave fares for the staff member and family after 18 months of service, settling-in allowance of K1,500 and annual leave of six weeks paid leave per year, education fees and assistance towards school fees, free housing, Salaries Contribution plan and medical benefit schemes are available.

Detailed applications (two copies), with curriculum vitae, together with the names and addresses of three referees should be received by The Registrar, Papua New Guinea University of Technology, Private Mail Bag, Lae, Papua New Guinea, by 30 April 1984.

Applicants resident in the United Kingdom should also send one copy to Association of Commonwealth Universities (Appts), 36 Gordon Square, London WC1H 0PF, from whom further general information may be obtained. H1

University of London
The London School of Economics and Political Science

LECTURESHIP IN SOCIAL PHILOSOPHY

Applications are invited for appointment from 1st October 1984 to a lectureship in Social Philosophy, in the Department of Philosophy. Applicants should have a good honours degree in economics, philosophy or a related subject and should have suitable qualifications in the field of twentieth-century literature or German philology and linguistics. The posts are tenable from October 1st 1984 or January 1st 1985 at £7,190–£14,125. Superannuation. Applications (six copies) should be sent by 24 April 1984 to the Registrar, The University, Manchester M13 9PL, from whom further particulars may be obtained. Please quote Ref. 79/84/THES. H1

The University of Newcastle Upon Tyne

Department of Chemical Engineering

LECTURER

Applications are invited for a Lectureship in the Department of Chemical Engineering commencing September 1984. Preference will be given to candidates who will be able to demonstrate a substantial commitment to teaching and research concerned with Latin America.

Salary on the scale for Lecturers £7,190 – £14,125, according to age, qualifications and experience.

Application forms and further particulars may be obtained from the Registrar, The University, Leeds LS2 9JT, quoting reference no. 38/17. Closing date for applications 13 April 1984. H1

University of Leeds

School of Geography

LECTURER

Applications are invited for the above post available for a fixed period of three years commencing September 1984. Preference will be given to candidates who will be able to demonstrate a substantial commitment to teaching and research concerned with Latin America.

Salary on the scale for Lecturers £7,190 – £14,125, according to age, qualifications and experience.

Application forms and further particulars may be obtained from the Registrar, The University, Leeds LS2 9JT, quoting reference no. 38/17. Closing date for applications 13 April 1984. H1

University of St Andrews
Department of Mediaeval History

Applications are invited for a

TEMPORARY LECTURESHIP

(Part-Time)

Tenable for one year in the first instance from 1st September 1984. Teaching required (honours level in period 400–1100 AD).

Salary within range £4,314 to £7,118 per annum, plus USS.

Further particulars may be obtained from the Establishments Officer, The University, College Gate, St Andrews, Fife KY16 9AJ, to whom applications (two copies, preferably in typescript) with the names of three referees should be sent to arrive not later than 12th April 1984. H1

University of Warwick

LECTURESHIPS IN EDUCATION

Applications are invited for two posts of Lecturer in Education tenable from October 1984. The successful applicants will teach professional courses for prospective primary teachers, and will all specialise in children with special educational needs, the other in special psychology, but applications are welcome from candidates with further specialist interests.

Salary on the Lecturer scale: £7,190–£14,125 p.a.

Further particulars and application forms from the Registrar, University of Warwick, Coventry, CV4 7AL, quoting Ref. No: 39/A/84/L.

Closing date for receipt of applications: 13th April 1984. H1

The University of New South Wales
Canberra, Australia

Faculty of Military Studies

PROFESSOR OF GOVERNMENT

The University has a Faculty of Military Studies at the Royal Military College, Duntroon, ACT, and has entered into an agreement with the Commonwealth of Australia to establish and maintain a course of the University within the ambit of the Australian Defence Force Academy. Staff of the Faculty will retain their University status.

Applications from suitably qualified candidates (normally in the age range 34–50) to an Junior Research Fellowship in connection with the Rolls-Royce Ltd. Project in Computational Fluid and/or Chemical Sciences, tenable for two years from 1 October 1984. The stipend of a Salary in the range of £7,190 – £8,875 per annum with £2,480 on the retirement allowance, plus additional benefits. The Fellowship is tenable in other cases, but in these cases the stipend will be adjusted to the appropriate point on the scale. Candidates should be in the age range 24–30 and have a doctorate or have equivalent research experience. Applications (nine copies, or one from overseas), naming three referees, should be received not later than 6 May 1984 from the Warden, Keble College, Oxford OX1 3PG. Please quote Ref. No. 3180/H1. H1

University of Oxford

PROFESSORSHIP OF THE ARCHAEOLOGY OF THE ROMAN EMPIRE

The electors intend to proceed to an election to the Professorship of the Archaeology of the Roman Empire which is currently vacant. The stipend of the professor is at present £16,680 per annum.

Applications (nine copies, or one from overseas), naming three referees but without testimonials, should be received not later than 8 May by the Registrar, University Offices, Wellington Square, Oxford, OX1 2JD, from whom further particulars may be obtained.

Fellows

CHARTERED ACCOUNTANTS' TRUST FOR EDUCATION AND RESEARCH (CATER) FELLOWSHIP

A Fellowship is offered for the academic year 1984/5 to support full-time higher degree study in Accounting at a British University as a prelude to a teaching career in higher education. Open to members of the Institute of Chartered Accountants in England and Wales with at least twelve months' post-qualifying experience who have obtained conditional acceptance for an appropriate one-year higher degree course.

Value £9,000 p.a., application form from:
Mr M. J. Brimmer, ICAEW,
389 Silbury Boulevard,
Witan Gate East,
Central Milton Keynes MK9 2HL.

Closing date for applications 21st May, 1984. (14409)

REMINDER

Copy for Classified Advertisements in the **THES** should arrive not later than 10am Monday preceeding publication.

UNIVERSITY OF EAST ANGLIA
NORWICH

CHAIR IN COMPUTING STUDIES

Applications are invited for a Chair in Computing Studies in the School of Computing Studies and Accountancy. The successful candidate will have a distinguished record of research and scholarship in one or more areas of Computing. The appointee will be expected to provide academic leadership in a group of more than twenty academic and associate related staff. There are three Chairs in Computing, two established and one personal, and the post now advertising is an established chair. Applications will be at an appropriate point on the Professorial scale £17,276 to £21,061 (under review), and will be tenable from October 1984 or a later date to be arranged.

Applications (five copies), giving full particulars of age, qualifications and experience, together with the names and addresses of three persons to whom reference may be made should be lodged with the Registrar and Secretary, University of East Anglia, Norwich NR4 7TJ (telephone 0603 56161, ext 2309) from whom further particulars may be obtained, not later than 4th May 1984. No form of application are issued. (14404)

UWIST

APPLIED CHEMISTRY LECTURER

(fixed-term – 5 years)

Inorganic Solution Chemistry

Salary:
£7,190–£14,125
per annum

Requests (quoting Ref. B35) for details and application form to Staffing Officer, UWIST, PO Box 68, Cardiff CF1 3XA

Closing Date:
13th April, 1984. (14399)

UWIST

University of Wales

TOWN PLANNING

LECTURER
(Transport Planning)

Two LECTURERS
(Town Planning)
(all fixed term – 3 years)

in any combination of the following areas:
Computing and IT in Planning;
Housing Policy;
the Development Process, Rural Planning;
Philosophy and Method in Planning.

Salary:
£7,190–£14,125 per annum.

Requests (quoting Ref. B34) for details, application form to Staffing Office, UWIST, PO Box 68, Cardiff CF1 3XA.

Closing date:
19th April 1984. (14395)

LOUGHBOROUGH UNIVERSITY OF TECHNOLOGY

Law and Practice of Banking

Applications are invited for a LECTURESHIP in the LAW AND PRACTICE OF BANKING tenable in the Department of Management Studies of the University, primarily to lecture to the undergraduate course in Banking and Finance. The appointee will also be an Associate Member of the Loughborough Banking Centre.

Applicants should possess a relevant degree and/or professional qualification and banking experience. The appointment is for three years in the first instance; starting salary in the scale £7,190 to £14,125. Further details and application forms from Paul Johnson, Establishment Officer, quoting ref no. 84/14/MS.

Loughborough Leicestershire (14401)

University of Cambridge

Applications are invited for a

LECTURESHIP OR ASSISTANT LECTURESHIP IN PHILOSOPHY

Appointment for three years from 1 October 1984 or as soon as possible thereafter, with potential for renewal to retiring age. Lecturer or Assistant Lecturer for two years, and Lecturer for third year; salary scale £6,810 to £14,125 per annum. There is also a salary scale £5,880 to £8,530 per annum for Assistant Lecturers. Applicants should have a first degree in Philosophy and a research degree or equivalent qualification. Further particulars may be obtained from the Secretary, Faculty of Philosophy, 9 West Road, Cambridge CB3 9DA, to whom applications should be sent by 31 March 1984. (14400)

University of Cambridge

REGIUS PROFESSORSHIP OF DIVINITY

Applications invited for the above Chair which became vacant on 1st October 1984 on the retirement of Professor R. Preston.

Present emoluments, including pensionable supplement, £20,076.

Applications (10 copies) should be sent to the Secretary General of the Faculties, The Old Schools, Cambridge CB2 1TN, from whom further information may be obtained. Applications should be received not later than 30 April 1984. (14403)

Polytechnics

Applications are invited for the following posts in the Department of Physiotherapy:

Salary: £8,313-£13,125
Post Ref: 84/5

LECTURER 'A' IN PHYSIOTHERAPY
(Permanent Contract)

The successful applicant will be concerned with the teaching and development of Applied Physics, Biomechanics and Physiotherapy Studies in the BSc degree course in Physiotherapy.

Post Ref: 84/6

LECTURER 'A' IN PHYSIOTHERAPY
(One Year Contract)

The successful applicant will be concerned with the teaching and development of physiotherapy studies in the BSc degree course in Physiotherapy.

Application forms and further particulars are available from the Secretary and Treasurer (Staffing), at the address or telephone number below.

The closing date for applications is Monday, 16th April 1984

(14410)

THE QUEEN'S COLLEGE GLASGOW
1 Park Drive, Glasgow, G3 6LP.
Tel: 041-334 8141.
A Scottish Central Institution.

CITY OF BIRMINGHAM POLYTECHNIC

FACULTY OF ENGINEERING AND SCIENCE

Department of Mechanical and Production Engineering

SENIOR LECTURER
School of Complementary Studies
(Half or Full Time for 2 years)

Required principally to teach General and Communication Studies in the BTEC Certificate programmes in Mechanical and Electrical Engineering. Degree or equivalent qualification and teaching experience required.

SENIOR LECTURER
In Plant Engineering and Thermofluid Dynamics

To lecture on BTEC courses involved with Plant Engineering as a major option and to assist in the teaching of Thermofluid Dynamics in both Higher Certificate and Diploma course. Graduate or equivalent required with industrial experience.

Posts tenable from 1st September, 1984.
Salary Scale: Lecturer II £7215-£11,568 p.a.
Senior Lecturer £10,683-£12,552 p.a. (bar) £13,443 p.a.
(Half or full time posts pro-rata)

Application forms (to be returned by 10th April, 1984) from The Personnel Officer, City of Birmingham Polytechnic, 'F' Block, Perry Barr, Birmingham B42 2SU. Tel: 021-356 9193 Ext. 215.

(14408)

DUNDEE COLLEGE OF TECHNOLOGY
Department of Business Studies

Lectureship in Psychology

The person appointed will be required to teach psychology up to honours degree level. Applicants must have an honours degree in an appropriate discipline and preferably have teaching, research and/or industrial experience.

Salary scale (currently under review) £8,313 – £12,228 (bar) – £13,125 with initial placing dependent upon approved previous experience. Financial assistance towards the cost of removal expenses may be payable.

Further particulars and application form obtainable from the Personnel Officer, Dundee College of Technology, Bell Street, Dundee, DD1 1HG to whom completed applications should be returned by 6 April 1984.

(14414)

Faculty of Business and Management

Applications are invited for the following posts:

Principal Lecturer (three posts)

School of Administrative Studies: (Ref. AA/109)
Course Leader designate for proposed BA (Hons) course in Business Administration.

School of Law: (Ref. AA/110)
Principal Lecturer in Law with responsibility for short courses and Continuing Professional Education developments.

School of Management Sciences: (Ref. AA/111)
Principal Lecturer in Business Information Technology.

Lecturer II/Senior Lecturer (three posts)

School of Organisation Studies: (Ref. AA/112)
Lecturer II or Senior Lecturer in Organisational Behaviour.

School of Administrative Studies: (Ref. AA/113)
Lecturer II or Senior Lecturer in Secretarial/Administrative Studies.

School of Law: (Ref. AA/114)
Lecturer II or Senior Lecturer in Law.

Salary Scales: PL £12,519 to £13,938 (Bar) to £16,744
SL £10,683 to £12,552 (Bar) to £13,443
LII £7,215 to £11,568

Application forms and further details obtainable from the Personnel Office, Preston Polytechnic, Corporation Street, Preston PR1 2TQ, quoting appropriate reference. Closing Date for receipt of completed applications 19th April, 1984.

PRESTON POLY TECHNIC

(14393)

Colleges of Higher Education

Post Ref: 84/2

LECTURER 'A'
IN TEXTILE SCIENCE AND TECHNOLOGY

£8,313–£13,125

Applications are invited for the above post in the Department of Applied and Life Sciences. The person appointed will teach mainly Textile Science and Technology on the BA Home Economics degree, together with smaller amounts of basic Chemistry and Physics.

Further details and application forms are available from the Secretary and Treasurer (Staffing), at the address or telephone number below.

The closing date for applications is Monday 16th April, 1984.

(14390)

THE QUEEN'S COLLEGE GLASGOW
1 Park Drive, Glasgow, G3 6LP.
Tel: 041-334 8141.
A Scottish Central Institution.

DUNDEE COLLEGE OF TECHNOLOGY
DEPARTMENT OF MECHANICAL & INDUSTRIAL ENGINEERING

SENIOR LECTURESHIP IN DYNAMICS

Applicants should possess a good honours degree in mechanical engineering, and preferably a higher degree, together with appropriate teaching and industrial or research experience.

The person appointed will be required to teach on a variety of courses up to honours degree level. He/she will also be required to undertake further development of links with industry.

Salary scale (currently under review): £12,228–£13,572 (bar)–£16,411. Initial placing depending upon approved previous experience. Financial assistance towards the cost of removal expenses may be payable.

Further particulars and application forms obtainable from The Personnel Officer, Dundee College of Technology, Bell Street, Dundee DD1 1HG to whom completed forms should be returned by 6 April 1984.

(14416)

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2 PRINCIPAL LECTURERS
Salary: £12,519–£15,744

7 SENIOR LECTURERS/ LECTURERS II
Salary: £7,215–£13,443

2 RESEARCH ASSISTANTS
Salary: £7,215–£11,568

(level of appointment and starting salary dependent upon qualifications and experience. A National salary award is anticipated April 1984)

IN THE DEPARTMENT OF COMMUNICATION ENGINEERING AND DEPARTMENT OF ELECTRICAL & ELECTRONIC ENGINEERING

Required to join a lively multidisciplinary group involved in:
(i) teaching undergraduates, including those on an MEng program and diploma students.
(ii) research and consultancy covering a wide range of activities detailed by the subject areas given below.

Applicants should hold a first degree in engineering or related discipline together with relevant industrial, teaching or research experience.

Lectureships in:
Digital Control
Computer Aided Digital Systems Design
Computer Vision Systems
Satellite Communications
Digital Communications
Software Engineering
LSI/VSLI System Design
Artificial Intelligence in Engineering
Computer Graphics and Image Processing

Research Assistantships in:
Software Design Tools
Active Tactile Sensors

Application forms to be returned by Friday 6th April, 1984 can be obtained together with further particulars, from the Personnel Office, Plymouth Polytechnic, Plymouth PL4 8AA. Tel: Plymouth (0752) 264639.

(14411)

Plymouth Polytechnic

Sheffield City Polytechnic

HEADS OF DEPARTMENT

Applications are invited for the following four heads of Department Posts.

APPLIED PHYSICS

ELECTRONIC SYSTEMS AND CONTROL ENGINEERING

HEALTH STUDIES

MECHANICAL AND PRODUCTION ENGINEERING

Salary Scale: Burnham HOD Grade VI Currently £16,632-£18,327.

Applicants should have appropriate academic and professional qualifications, and substantial experience in their area of study.

Application forms and further details are available from the Personnel Officer, Sheffield City Polytechnic, Halfords House, Fitzalan Square, Sheffield S1 2BB, or by telephoning 0742 20911 Extension 2387.

Completed forms should be returned by 27 April 1984.

Sheffield City Polytechnic is an Equal Opportunities Employer

(14412)

Teesside Polytechnic
We are an 'Equal Opportunity Employer'
Department of Mathematics and Statistics

TEMPORARY APPOINTMENT (2 YEARS) LECTURER II IN STATISTICS AND OPERATIONAL RESEARCH

A temporary vacancy, for 2 years commencing Summer 1984 has arisen, owing to overseas secondment of the permanent post-holder.

Applicants should be well qualified in statistics and operational research with relevant industrial, teaching or research experience.

The Department runs a comprehensive range of degree and diploma courses and has links with the Department of Computer Science and a wide range of service work.

The Polytechnic is well served by computing and local computers and related facilities.

Salary: £7,215 — £11,568 per annum.

Application forms and further particulars from: The Personnel Section, Teesside Polytechnic, Borough Road, Middlesbrough, Cleveland TS1 3BA. Tel: (0642) 218121 Ext. 2112.

Closing date for receipt of completed applications: 13th April, 1984.

(14413)

Polytechnic of Central London
Faculty of Languages

LECTURER II/SENIOR LECTURER IN CHINESE

A vacancy has arisen in the Chinese Section for a lecturer to be responsible for teaching Chinese language and contemporary Chinese economics on the full-time and part-time degree courses. The successful candidate will also be required to take some language classes and undertake some administrative work in the section.

Candidates should be well qualified, with a high degree of competence in written and spoken Chinese, preferably obtained in China, and have undertaken research at the later stages of the degree course.

An appointment will be made at a level commensurate with the candidate's experience and qualifications.

Salary on scale: £7,215–£11,568 (EAR)–£13,443 per annum inclusive of London Allowance.

Application forms and further details available from the Personnel Section, Polytechnic of Central London, 309 Regent Street, London W1R 8AL. Closing date 4 April 1984.

(14407)

Polytechnics continued

NORTH STAFFORDSHIRE POLYTECHNIC

ASSISTANT DIRECTOR AND DEAN OF FACULTY OF ART & DESIGN

Salary scale in accordance with Burnham Group 10 Vice Principal.

Applications are invited for the above post, duties to commence as soon as possible.

Application forms and further particulars obtainable from The Personnel Officer, North Staffordshire Polytechnic, College Road, Stoke-on-Trent ST4 2DE. Tel: (0782) 45531, Ext. 297.

Closing date for completed applications – 13th April, 1984. (14406)

Lecturer II in Marketing
£7,215–£11,568 (Pay award pending)
Normally with further advancement to £13,443

Required to teach upon a variety of courses in Marketing. Applicants must have appropriate academic qualifications and industrial experience. Ability to offer marketing research would be an advantage.

Lecturer II/ Senior Lecturer in Geophysics
£7,215–£13,443 (Pay award pending)

(Level of appointment and starting salary dependent upon qualifications and experience)

To teach on honours undergraduate courses in geology and initiate research. Candidates should have a strong geological background with either a proven record of research or industrial experience in subsurface geophysical techniques. A willingness to integrate basic computing and numerical skills into geology teaching would be an advantage.

Application forms, to be returned by Friday 13th April, 1984, can be obtained with further particulars from the Personnel Officer, Plymouth Polytechnic, Drake Circus, Plymouth PL4 8AA. Tel: Plymouth (0752) 264639.

(14405)

Plymouth Polytechnic

SHEFFIELD CITY POLYTECHNIC
DEPARTMENT OF ECONOMICS AND BUSINESS STUDIES

LECTURER II SENIOR LECTURER IN MARKETING

Will join a team who are responsible for teaching Marketing on diploma, degree and post-graduate courses in Business and Management.

Should be able to demonstrate a high level of appreciation of the theoretical and practical aspects of Marketing and to show an active interest in research and/or consultancy. They should normally have a good first degree, and a relevant post-graduate qualification.

An interest in the Marketing of Services or in Buyer Behaviour would be considered advantageous although not essential.

Salary scale £7,215–£11,568 or £10,683–£12,552 (Bar).

Application forms and further details from the Personnel Officer, (Dept THES), Sheffield City Polytechnic, Hefford House, Fitzalan Square, Sheffield S1 2BB. Tel: 0742 20911, Ext 2387. Closing date: 6th April.

Sheffield City Polytechnic is an Equal Opportunities Employer.

(14402)

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ACADEMIC REGISTRAR

Applications for this senior administrative post are invited from candidates with a degree or equivalent qualification who have significant experience in the management of higher education and who are keen to play a key role in the development of the Polytechnic in the critical years ahead. Salary in the range (under review) £15,189 to £16,839 inclusive of London Allowance.

Application forms and further particulars from the Personnel Officer, Polytechnic of Central London, 309 Regent Street, London W1R 8AL, to whom applications should be submitted by 12th April 1984.

(14178)

The Polytechnic of Central London

Colleges of Further Education

ilea Inner London Education Authority

PRINCIPAL
HACKNEY COLLEGE

Applications are invited for the post of Principal at Hackney College to commence on the 1st September 1984, or as soon as possible.

The College is organised in eight departments:– Building; Business Studies; Continuing Education; Electrical Engineering; Engineering Processes; General & Community Studies; Mathematics & Science; Mechanical Engineering.

Premises are located on ten college sites in the London Boroughs of Hackney and Tower Hamlets, with headquarters in Mare Street, Hackney, E8.

Applicants should be well qualified academically, possess a sound knowledge of Further and Higher Education, together with teaching and administrative experience at a senior level and relevant experience in Industry or Commerce.

Under the provisions of the Burnham (Further Education) Report, the College is in Group 7 and the salary for the post of Principal is £22,905 plus £867 London Allowance.

Further information and application forms (to be returned by 13April 1984) may be obtained from the Education Officer (SO/FHE 4) Inner London Education Authority, Room 257e, The County Hall, London SE1 7PB.

ILEA is an equal opportunities employer

(14409)

Durham County Council
New College Durham

PRINCIPAL LEONARD G. BEWSHER, Acad. Dip. Ed. (Lond.), BSc. (Econ.), MA, FRSA.

Faculty of Education

TEMPORARY LECTURER II IN EDUCATION (LEARNING DIFFICULTIES)

Required for one year starting 1st September, 1984, a lecturer to contribute to the teaching and development of a range of in-service courses for teachers including a part-time BEd and advanced Diploma courses. He/she should have significant classroom experience including teaching and developing curricula for children with special needs and a higher qualification.

LII Salary Scale: £7,215–£11,568 per annum.

Further details and application forms, returnable by Friday, 6th April 1984, may be obtained from the Principal, New College Durham, Framwellgate Moor Centre, Durham DH1 5ES, on receipt of foolscap envelope. (14417)

Isle of Wight County Council
Isle of Wight College of Arts and Technology
Medina Way
Newport, IW PO30 5TA

Department of Business and General Studies

Required in September 1984.

LECTURER GRADE I TO TEACH OFFICE MACHINERY, TELELINE, WORD PROCESSING AND SOME TYPEWRITING

Applicants should have appropriate qualifications and business experience and are invited to give details of additional subjects they can offer.

A teaching qualification or teaching experience is desirable.

The appointment will be for one year in the first instance.

Salary Scale: Lecturer I – £5,643–£8,733.

Application forms and further information available from The Chief Administrative Officer at the College to whom completed forms should be returned by Wednesday, 4th April 1984.

(14417)

Connaught College

LECTURER TO TEACH COMPUTER STUDIES

The Directors of Connaught College require an innovative and competent Lecturer to teach Computer Studies to advanced level.

The person appointed will be required to:

1. Manage a 10 station BBC econet.
2. Actively provide support for colleagues in a variety of disciplines in the fields of IT.
3. Undertake research and development.
4. Negotiate their own salary and contract time.

Letters of application should be sent in writing and include a detailed CV together with the names, addresses and telephone numbers of 4 referees.

Candidates are also invited to submit a disc of their original work.

Interviews will take place throughout the weekend of 7th and 8th April.

(14417)

Personal

IMMEDIATE ADVANCES £100 to £250,000. Unitron terms on receivers. Financial Trust Ltd., 51 Dover Street, Piccadilly, London W1A 4HQ. Phone 01-491 2934 or 408 0048.

(14417)

ISLE OF WIGHT COUNTRY COUNCIL EDUCATION COMMITTEE in conjunction with the Home Office

H.M. PRISON PARKHURST

Deputy Education Officer

Applications are invited for the full-time post of Deputy Education Officer at this top security establishment for long-term male prisoners.

Applicants should be experienced, qualified teachers able to take over the organisation of Mathematics teaching in the general education programme to which the department operates. FE and/or AE experience will be an added advantage. Duties will include administration and supervision of classes and teachers as well as a personal teaching commitment. Candidates must be prepared to undertake two evening duties each week with time off in lieu.

Salary: L II (£7215-£11,568).

Application forms and further details can be obtained from the County Education Officer, County Hall, Newport, Isle of Wight, PO30 1UD, to whom completed forms should be returned by 13th April, 1984.

(14411)

Isle of Wight County Council

FURTHER EDUCATION STAFF COLLEGE
COOMBE LODGE, BLAGDON, BRISTOL BS18 6RQ

RE-ADVERTISEMENT

Owing to the retirement of the Director the Governing Body invite applications for the post of

DIRECTOR

The purpose of the Staff College is to improve the effectiveness and management of colleges of Further and Higher Education. It serves Local Authorities and colleges throughout the U.K.

The Director is responsible for the leadership and development of the Staff College's activities

Salary: Negotiable within the range £25,000–£27,500.

Further particulars from the Registrar and Clerk to the Governors.

Previous applicants who wish to re-apply should inform the Registrar and Clerk to the Governors before the *closing date for applications – Friday 13 April 1984.*

(14388)

ST. GODRIC'S COLLEGE, HAMPSTEAD.

HEAD TEACHER OF BUSINESS STUDIES SUBJECTS

Applications are invited for the post of Head Teacher of Business Studies Subjects.

The person appointed will be expected to teach some of the following subjects:

Economics – Accounting
Management – Law
Communications

Additional responsibilities include the administration of the Business Studies Course, the Business Studies element within our Secretarial Courses and the leadership of a small team of part-time lecturers.

Please apply to Miss T. A. Humphreys, Head of Training, St.Godric's College, 1 Arkwright Road, London NW3 6AD Tel: 01-435 1831

(14389)

Research and Studentships

University of Surrey
Department of Educational Studies

RESEARCH OPPORTUNITIES

The Department has a strong tradition of research and development work aimed at improving teaching and learning in higher, further, adult, continuing education, in Youth and Community, in schools, and in Computer Assisted Learning. It provides a programme of formal research training for its post-graduate students and has a good higher degree completion record.

Individuals holding, or expecting to hold, a First or Upper Second Class Honours or Masters degree, and who have a deep interest in education, are invited to send us a c.v. and mention any areas of specific interest. We propose to interview potential candidates on Friday, 13 April 1984.

(14411)

The Department currently has a number of studentships by the Economic and Social Research Council (ESRC). The Department is keen to support suitable applications for ESRC Conversion Courses which are for candidates who must be ordinarily resident in Great Britain, and are for two years, but may be extended to three years, and are currently of £2,450 per annum. This may be increased through allowances for older students, dependants and experience.

Successful candidates will be required to register for M.Phil/Ph.D. C.V. by Wednesday 3 April 1984 to Miss D. Gray (MS), Department of Educational Studies, University of Surrey, Guildford, GU2 5XH, from whom further particulars can be obtained. Tel: Guildford 571281, Ext. 619.

(14411)

Medical Research Council
Medical Sociology Unit
(Glasgow)

SOCIAL SCIENTIST/ SOCIAL STATISTICIAN

Applications are invited for a Career Non-Clinical Scientific post with the Medical Research Council. The post is tenable at the Medical Sociology Unit in the first instance. Failing suitably qualified candidates for a career appointment, the post might be filled by a short-term appointment of 5 (to 8) years.

The MRC Medical Sociology Unit will be relocated to Glasgow in Autumn 1984. Its core programme will consist of longitudinal studies of several age cohorts in two or more communities, the aim being to explore the processes linking social structure and patterns of health and illness.

The person appointed will be expected to take a major share of the responsibility for the design and analysis of the core programme, in co-operation with the existing research team and with interested researchers and agencies outside the unit. The post is suitable for a social scientist with an interest in health and illness and with experience of the design, execution and analysis of longitudinal survey research. Alternatively a social statistician or survey methodologist with an interest in the sociology of health and illness might be considered.

The post will be tenable from a date to be negotiated, but not later than 1st October 1984. Salary on Remuneration Unit Scale 1 at an appropriate point on the scales for university research assistants or academic staff. Further particulars may be obtained from Dr. Philip McIntyre, Director, MRC Medical Sociology Unit, Institute of Medical Sociology, Westburn Road, Aberdeen AB9 2ZG. Tel: 0224-681818 Ext. 3421 with whom applications – including a full CV and the names of 3 professional referees – should be lodged by 30th April 1984.

(14411)

Durham University
Department of Geography

RESEARCH ASSISTANT IN REMOTE SENSING

Applications are invited from post-doctoral or other candidates to work on a NERC Special Topic research project entitled "investigation of multiple remote sensing for geological purposes" under the direction of Dr. I. Harris and Dr. J. Mundy. The post is tenable from as soon as possible until 30th September 1987.

Initial salary in the range £6,810–£8,330 on Range 1A or 1B plus superannuation.

Applications (qualifications, training, experience) should be sent by 30th April 1984 to the Registrary, Science Laboratories, South Road, Durham DH1 3LE, from whom further particulars may be obtained.

(14411)

Research & Studentships continued

Chelmer Institute of Higher Education
Essex County Council
Education Research Centre, Sawyers Hall Lane, Brentwood

RESEARCH ASSISTANT

Required as soon as possible for a full-time two-year fixed-term appointment. The successful candidate will be a member of a small team undertaking a British Library funded evaluation of the Essex Secondary School Library Project. Applicants should have a good honours degree in Education or a relevant Social Science, and an interest in interpretive methodologies of evaluation. Experience of similar research would be an advantage but is not a necessity.

Salary: £5,462–£6,576 + £250 London Weighting per annum.

Application forms and further details available from the Principal Administrative Officer, Chelmer Institute of Higher Education, Victoria Road South, Chelmsford CM1 1LL, to whom applications should be returned by 9th April 1984. Telephone 0245 354491 Ext. 247. H11

University of Durham
Department of Geography
Applications are invited for

NERC RESEARCH STUDENTSHIP

(Supervised by Dr R. Harris and tenable for three years from 1st October 1984) on "Radar remote sensing of semi-arid terrain" involving analysis of Seasat and SIR-X radar imagery of eastern Tunisia.

Prospective applicants should hold or expect to hold a good honours degree in Geography or a relevant science subject.

Further particulars are available from the Administrative Assistant, Department of Geography, Science Laboratories, South Road, Durham DH1 3LE. H11

University of Sheffield
Japan Foundation Endowment Committee

GRANTS FOR TEACHING AND RESEARCH

The annual income from a donation made by the Japan Foundation is available for disbursement by the Committee established under the auspices of the UGC for the promotion of Japanese Studies in universities in the UK.

Further particulars and application forms are obtain able from the Secretary of the Committee, c/o the University of Sheffield, Sheffield S10 2TN, to whom applications should be sent by 14 May 1984. Quote Ref: RSS/JF. H11

University of Edinburgh
Secretary's Office

ADMINISTRATIVE ASSISTANTS

Applications are invited for two posts of Administrative Assistant (Grade 1A) in the academic section of the office of the Secretary to the University.

Post A will cover a range of duties, including acting as Secretary to certain University committees and provision of assistance to more senior administrative staff (Reference 461/A).

Post B will be located in the Registry, relating particularly to the work of the Fees section of that Office. In addition, the duties will include assistance in the provision of quantitative management information and some committee servicing (Reference 461/B).

Candidates should have a good honours degree or comparable qualification. Previous administrative experience would be a distinct advantage, but applicants who expect to graduate with a high class of honours in 1984 will be considered.

The initial salary will be at an appropriate point on the Administrative Grade 1A scale (£6,510–£11,613 per annum, currently under review).

Applications (eight copies), giving the names of two persons to whom reference may be made, and quoting the appropriate reference, should be lodged not later than 17th April 1984 with the Secretary to the University, University of Edinburgh, Old College, South Bridge, Edinburgh EH8 9YL, from whom further particulars may be obtained. Applicants should indicate either for which post they wish to be considered or, if both posts, for which they would have a preference. H12

University of London
Royal Holloway College and Bedford College
Regent's Park and Egham

ADMINISTRATIVE OFFICER (PERSONNEL)

Applications are invited from experienced persons to undertake a range of duties which will involve the transfer of the personnel function from Bedford College in Regent's Park to the Royal Holloway College site in Egham. Surveys in preparation for the later formal amalgamation of the two Colleges on that site. The person appointed will be expected to spend an increasing amount of time at Egham and after amalgamation, to continue as a member of the Personnel Department of the new college.

Salary in the range £7,406 – £12,801 (at 1st April) plus addressed envelope for further details to the Personnel Secretary, Bedford College, Regent's Park, London NW1 4NS to whom applications should be submitted by 11 April 1984. H12

Miscellaneous

SUMMER TUTORS required July 5 to August 1 to "live-in" with 16/17 year old American students in London, Edinburgh, Yorkshire. Society and Culture explored in talks, projects and visits. Tutors to help students make use of the experience. They must be enthusiastic, enquiring, committed and able to motivate students. Also driving licence, knowledge of London. Salary £550. Write describing interests and suitability (including CV and PAE) to JCA/84.2 23, Vincent Terrace, London N1 8NN. H27

Administration

London Business School

FINANCE OFFICER

The London Business School, having already established itself as a leading institution for business studies, has an extremely interesting portfolio of activities, with an annual turnover in excess of £4½m.

The present Finance Officer will be retiring next year and the School is seeking to appoint a Finance Officer designate, who will report to the Secretary & Treasurer, and will be entirely responsible for the finance and accounting team for day-to-day accountancy, budgetary control, and management information systems and will assist and advise the Secretary on all matters relating to long-term financial planning. The day-to-day work is carried out with an in-house NCR system 9020 computer.

The successful candidate will have a professional qualification and, preferably, a working knowledge of university finance. This is a senior appointment of the School's management team and there is considerable scope for an interesting career. A good salary will be offered, within Scale III for university administrative staff. Membership of the Universities Superannuation Scheme is required.

Application, including curriculum vitae, in writing to: Mr. B.L. Dodridge, Secretary & Treasurer, London Business School, Sussex Place, Regent's Park, London NW1 4SA.

Requests for a Job Description please telephone Mrs. E Watson on 01-262 5050.

RICHMOND COLLEGE
The American International College of London

Position:

DEAN OF STUDENTS

Richmond College is an expanding, independent, non-profit, accredited international liberal arts university college with a current student population of 750 in which more than 70 nations are represented.

As a senior administrator the Dean of Students has overall responsibility for student life, extracurricular educational programs, and student discipline. The Dean of Students currently has on professional staff an Associate Dean and four Assistant Deans.

The Dean of Students reports to the President and participates in the development of policy and in decision making as a member of the Management Team which advises the President.

Qualifications: Candidates must have at least a Master's degree or equivalent qualifications and a minimum of five years' experience in university or college administration. Understanding of a multicultural environment is essential; candidates with experience in international education are given preference.

Position available summer 1984.

Salary is competitive for the position and is negotiable, depending on experience and credentials.

Letter of application, curriculum vitae, names and addresses of three references and statement of salary expectations should be submitted by airmail to:

Office of the President, Richmond College
Queens Road, Richmond, Surrey TW10 6JP
England (1409)

ROLLE COLLEGE Exmouth

FACULTY OF BA STUDIES

Applications are invited from suitably qualified persons for the following posts, tenable from September, 1984. Candidates for all posts must possess a higher degree and have recent research or teaching experience at honours degree level. Applicants with an express interest in developing interdisciplinary research and teaching may have an advantage.

Lecturer II – English Literature

Candidates should have specialist interests in nineteenth and twentieth century English and American literature with particular emphasis on twentieth century drama.

Lecturer II – History with Politics

Candidates must have a wide general interest in modern British and European History and Politics and must be able to offer specialist courses in American History and in Government and Social Policy.

Lecturer II – Sociology

Candidates should have wide interests in Sociology and the ability to teach Politics would be an added advantage. The successful candidate should be familiar with empirical research techniques.

Lecturer II – Theatre Arts

(One Full Time and One Full Time Temporary Post)

Candidates should have experience in the integration of practical and academic approaches to Theatre Arts and be competent in Peformance Theory and Practice, Theatre Forms and Production Techniques.

Director of Resources – Principal Lecturer or Tutor Librarian – Senior Lecturer

Applications are invited from well qualified persons. At Principal Lecturer level the post holder will be responsible for the management and coordination of all resource material including library management. At Senior Lecturer level the post holder will be responsible for library management only. The College are looking for applicants at both levels as if unable to appoint at Principal Lecturer level the appointment will be made to the Tutor Librarianship.

Salary scales
Lecturer II – £ 7,215–£11,022
Senior Lecturer – £10,683–£12,582
Principal Lecturer – £12,519–£13,983

Further details are available from The Secretary to the Principal, Rolle College, Exmouth, Devon EX8 2AT. Telephone (0395) 265344. Applications should be received by 10th April. (14102)

S. MARTIN'S COLLEGE OF HIGHER EDUCATION
LANCASTER

VICE-PRINCIPAL
(Group 6)

Applications are invited from suitably qualified and experienced persons for the post of Vice-Principal at this Church of England College of Higher Education from 1st January 1985, on the retirement of the present holder.

Application forms and further details may be obtained from The Principal, S. Martin's College, Lancaster LA1 3JD. Application forms should be returned by 1st May. (14184)

Applications are invited for the following five posts. All applicants must possess a good honours degree and have experience of research or possess a higher degree, appropriate professional qualification in a relevant area, familiarity with aspects of Information Technology will be a distinct advantage for all posts and Qualified Teacher Status is normally expected.

EXTRA-FACULTY POST OF READER IN CURRICULUM DEVELOPMENT

To develop the use of appropriate aspects of Information Technology across all programmes and courses offered by the College and to undertake research in specific areas of curriculum change.

LECTURER II/SENIOR LECTURER (4 POSTS)

1. Physical Science

To teach Physical Science up to final year degree level and able to offer Chemistry at first or second level. A specialist knowledge in Electronics and Computing plus a strong interest in research would be advantageous.

2. Mathematics (New Post)

To teach all aspects of pure mathematics to the final year of BSc and BEd Honours Degree level courses. A specialist interest in Computing or Statistics would be advantageous.

3. Business and Management Studies

To develop and teach the data processing and systems analysis and related areas in a variety of Business and Management Courses. An appropriate professional qualification is essential.

4. Education Management (New Post)

The successful candidate must hold a higher degree in Education Management and will be expected to make a part-teaching contribution across both Diploma and MSc/ed Education Management Programmes.

Application Forms and further details of the posts and the College are available from: The Assistant Director (Staffing), Crewe + Alsager College of Higher Education, Alsager ST7 2HL.

THE CLOSING DATE FOR COMPLETED APPLICATIONS MONDAY, 23rd APRIL, 1984. (41)

Crewe+Alsager College of Higher Education

Courses

Christ Church College of Higher Education
Canterbury

Required for the beginning of the Autumn term 1984

(1) LECTURER II/ SENIOR LECTURER IN PRE-VOCATIONAL EDUCATION

The successful candidate will be required to develop courses in Pre-vocational Education for students in training, qualified teachers and lecturers. Recent and relevant experience in industry or a further education establishment is essential.

(2) LECTURER II/ SENIOR LECTURER IN EDUCATION

Candidates should be qualified in the area of Special Educational Needs and have relevant experience, preferably at the primary level.

The college has approx. students and offers BA, BEd and MEd degrees, DipHE and advanced diplomas and higher degrees in Education.

Salary scale: Lecturer II/senior Lecturer £7,215–£13,443 pa.

For further details write to Mrs Jean Long, Personal Assistant to Principal, Christ Church College, Canterbury enclosing a stamped addressed envelope, to whom applications should be sent not later than 5th April. H8

Cambridgeshire College of Arts and Technology

LECTURER I IN MODERN LANGUAGES

(Spanish and/or German)

Required from 1st September to teach A level, Linguist Secretarial and Honours Degree Courses. Applicants should hold a Honours Degree and have a good knowledge of the complementary institutions of Spain and/or Germany. Applied Linguistic Experience given to candidates able to teach both languages at least one to BA (Hons) level. Research and teaching experience will be an advantage.

Salary: £5,649–£9,765, starting point dependent upon qualifications and experience.

Details and forms, to be returned by 16th April, 1984, from Head of Department of Languages, Cambridgeshire College of Arts and Technology, Collier Road, Cambridge CB1 2QT. (14189)

The University of B...

GRADUATE STUDIES IN MANAGEMENT SYSTEMS AND SCIENCES

Applications are invited from well qualified graduates to enrol for full-time courses leading to the M.A. Management Sciences or M.Sc. Management.

The M.A. Management Sciences is a course which is suitable for graduates of all disciplines. Business Studies, Modern Languages. The course is designed to give students a thorough grounding in the application of management theory.

The M.Sc. Management Sciences is a course which is suitable for graduates in Mathematics, Economics, the Physical Sciences or Engineering who are desirous of acquiring an appreciation of modern management science techniques and computer applications in business.

Both courses are of one year duration and consist of an intensive lecture programme and either a project or dissertation.

It is possible to take the courses part-time in not more than two or three years over a longer period. This would be of particular interest to persons wishing to improve their qualification while remaining with their present employer.

For further details contact:

The Secretary, Postgraduate Studies, Faculty of Operational Research, University of Bath, Bath BA2 7AY. Tel: 0225 48126

Holidays and Accommodation

Martinique. French Antilles. Rent a fully furnished villa for 2/4/6 persons. Sea views. Swimming pool. Tennis nearby. Contact owner direct: Mrs. Florida Smith, P. O. Box 248, Christiansted, St. Croix, U.S. Virgin Islands 00820. Tel: (809) 773-1285.

LUXURY CHEAP HOLIDAYS Rent a Chateau, Villa or Home in Italy, France, Spain, Portugal, Greece, USA, Canada, Europe, Caribbean. 5000 properties to choose from. Details of your requirements plus 6 stamps (refundable) to Dept. THES, 57 Uxbridge Road, London W5 2BS. (14188)

Overseas

Lecturers
at various levels for
South Africa

Applications are invited from suitably qualified candidates (regardless of race, colour or creed) for the following posts. All exist at English-language Rhodes University in Grahamstown, located on the picturesque 'garden route' about an hour's drive from the warm Indian Ocean and golden beaches.

PHARMACEUTICAL CHEMISTRY

Senior Lecturer/Lecturer for the School of Pharmaceutical Sciences as soon as possible.

PHARMACEUTICS

Senior Lecturer/Lecturer for a new post in the above school in Physical of Industrial Pharmacy.

PHYSICS & ELECTRONICS

Lecturer/Junior Lecturer for either a permanent or short-term contractual appointment in this Department as soon as possible.

BIOCHEMISTRY

Lecturer/Junior Lecturer as soon as possible for the Department of Chemistry and Biochemistry.

SOCIOLOGY & INDUSTRIAL SOCIOLOGY

A Junior Lecturer for a 2-year contract post in this Department, starting 1 January, 1985.

MUSIC & MUSICOLOGY

Lecturer/Junior Lecturer for this Department from 1 July, 1984.

JOURNALISM & MEDIA STUDIES

Senior Lecturer/Lecturer required in this Department from 1 July, 1984.

Salary scales (excluding an allowance of roughly 12% per annum) on an exchange rate of R1.79 equals approx. £1:
Snr. Lecturer: R16,657–R24,045 pa
Lecturer: R12,657–R22,173 pa
Jnr. Lecturer: R 9,075–R14,217 pa

In addition to the above (dependent upon qualifications and experience). We offer benefits including ● free air passages ● annual service bonus ● generous leave privileges ● financial assistance towards education of children at Rhodes University, etc. Permanent appointees will become members of the university's pension and medical aid schemes, while qualifying for a housing subsidy. Grahamstown itself will offer a high standard of living at reasonable cost, attractive countryside and a year-round outdoor climate.

For detailed information sheets, please write to The Secretary, SA Universities Office, 2nd Floor, Chichester House, 278 High Holborn, London WC1V 7HE, quoting ref 11/1/1167 clearly on your letter and envelope. All interviews will be conducted in the UK soon.

RHODES UNIVERSITY (14400)

MECHANICAL ENGINEERING

The Department of Mechanical Engineering at Stevens Institute of Technology invites applications for tenure track positions in one or more of the following areas: Computer Aided Design, Computer Aided Manufacturing, Robotics, Control Systems, Microprocessor Applications and Mechanical Design. Applicants are expected to have interest in teaching undergraduate/graduate courses and in developing research activities. Applicants should have earned doctorate in engineering. Rank and salary commensurate with qualifications. The positions are available starting August 30, 1984 or January 21, 1985. Deadline for applications is April 15, 1984 or until positions are filled. Send resume with names and addresses of three references to Dr. John N. Crisp, Jess H. Davis Professor and Head of Mechanical Engineering Department Stevens Institute of Technology, Castle Point, Hoboken, NJ 07030, U.S.A.

Stevens is an equal opportunity/ affirmative action employer. (14389)

Holidays and Accommodation

Escape to the Hebrides

We offer a range of cruises aboard Kyleshan to the Hebridean Islands and St. Kilda, ideally suited for all interests and ages. Please write or telephone for brochure to: Hebridean Holidays, Harbour Troon, Ayrshire. (0292) 316464. H24

WHY NOT LET YOUR (2nd) HOME to a family from the continent (Holland, Germany, France, USA) on exchange basis. Our home in international circle, 5000 teachers M.D.'s, officials etc. Saving stays arrang. possible. Ref. 870 Binkhuysen, P.O. Box 870, 1000 AG Castricum, Holland. H24

PLEASE MENTION THE T.H.E.S. when replying to advertisements

UNIVERSITY OF MALAWI

STAFF VACANCIES: CHANCELLOR COLLEGE

Applications are invited from suitably qualified candidates for the following posts tenable from September/October 1984 at Chancellor College, Zomba, a constituent College of the University of Malawi.

DEPARTMENT OF ECONOMICS

Lecturer/Senior Lecturer/Reader in Economics (2 posts)

Successful applicants will be required to teach at least three subjects in either of the following two fields, (1) Public Finance, Econometrics, Micro-Economics, Economics Development, or (2) Transport Economics, Financial Accounting, Management Accounting, National Economic Accounting, Statistics, in a programme leading to the award of a 4-year General Degree, and should also be able to contribute to a fifth-year end-on Honours Degree.

Candidates must possess a good Honours Degree in Economics and a postgraduate qualification, as well as teaching and/or practical experience in one or more of the required specialities, and should be competent to undertake and supervise some research.

DEPARTMENT OF PHYSICS

Lecturer/Senior Lecturer in Physics and Physics/Electronics (2 posts)

Successful applicants will be required to teach in a programme leading to the award of either a 4-year General Degree or a 5-year B.Ed., and should also be able to contribute to a fifth-year end-on Honours Degree.

Candidates must possess a good Honours Degree in either Physics or Physics/Electronics with an appropriate postgraduate qualification, as well as teaching and/or practical experience, and should be competent to undertake and supervise some research. An interest in departmental activities as regards semi-conductor analysis, solar energy, and accoustics would be considered an advantage.

DEPARTMENT OF PHILOSOPHY (including Classics)

Lecturer/Senior Lecturer in Philosophy

The successful applicant will be required to teach at least two of the following subjects, (1) Philosophy of Science, (2) Logic, (3) Aesthetics, and (4) African Philosophy, in a programme leading to the award of a 4-year General Degree.

Candidates must possess a good Honours Degree in Philosophy and a postgraduate qualification, as well as teaching experience, and should be competent to undertake and supervise some research.

Lecturer/Senior Lecturer in Classics

The successful applicant will be required to teach one or more of the following subjects, (1) Classical History, (2) Classical Philosophy, and (3) Classical Literature, in a programme leading to the award of a 4-year General Degree, or a 5-year B.Ed.

Candidates must possess a good Honours Degree in Classics and a postgraduate qualification, as well as teaching experience and a knowledge of Latin and/or Greek.

DEPARTMENT OF ENGLISH

Lecturer/Senior Lecturer in English

The successful applicant will be required to teach one or more of the following subjects, (1) Literature, Literary Theory, and Criticism, (2) Theoretical and Applied Linguistics, (3) Reading and Writing, in a programme leading to the award of either a 4-year General Degree or a 5-year B.Ed., and should also be able to contribute to a fifth-year end-on Honours Degree.

Candidates must possess a good Honours Degree in either English or Linguistics and a postgraduate qualification, as well as teaching experience, and should be competent to undertake and supervise some research. Familiarity with modern methods of teaching language would be an advantage.

ENGLISH LANGUAGE UNIT

Lecturer/Senior Lecturer in English (2 posts)

Successful applicants will be required to teach English as a Second Language in a programme leading to the award of either a 4-year General Degree or a 5-year B.Ed.

Candidates must possess a good Honours Degree in English and a postgraduate qualification in Applied Linguistics, as well as teaching experience in Educational Technology or English for Specific Purposes or Teacher Education, and should be able to produce a variety of sharply focused texts for students.

DEPARTMENT OF GEOGRAPHY AND EARTH SCIENCES

Lecturer/Senior Lecturer in Social Geography (2 posts)

Successful applicants will be required to teach at least two of the following subjects, (1) Economic Geography, (2) Population Geography, (3) Agricultural Geography, (4) Quantitative Methods in Geography, (5) Environmental Studies and Resource Management, (6) Spatial Organization, and (7) History and Philosophy of Geographic Thought, in a programme leading to the award of either a 4-year General Degree or a 5-year B.Ed., and should also be able to contribute to a fifth-year end-on Honours Degree.

Candidates must possess a good Honours Degree in Geography and a postgraduate qualification, as well as teaching and/or practical experience, and should be competent to undertake and supervise some research. The ability to teach an integrated introductory course in Human Geography would be an advantage.

Lecturer/Senior Lecturer in Physical Geography

The successful applicant will be required to teach Physical Geography in a programme leading to the award of either a 4-year General Degree or a 5-year B.Ed., and should also be able to contribute to a fifth-year end-on Honours Degree.

Candidates must possess a good Honours Degree in Geography and a postgraduate qualification, as well as teaching and/or practical experience in Geomorphology and Hydrology, and should be competent to undertake and supervise some research. Familiarity with airphoto interpretation would be an advantage.

DEPARTMENT OF BIOLOGY

Lecturer/Senior Lecturer in Plant Biology

The successful applicant will be required to teach either Biology and/or Botany in a programme leading to the award of either a 4-year General Degree or a 5-year B.Ed., and should be able to contribute to a fifth-year end-on Honours Degree.

Candidates must possess a good Honours Degree in Biology or Botany and a postgraduate qualification in Cryptogamic Botany (algae/pteridophytes), as well as teaching and/or practical experience, and should be competent to undertake and supervise some research.

Lecturer/Senior Lecturer in Vertebrate Zoology

The successful applicant will be required to teach Animal Biology and especially Vertebrate Zoology in a programme leading to the award of either a 4-year General Degree or a 5-year B.Ed., and should also be able to contribute to a fifth-year end-on Honours Degree.

Candidates must possess a good Honours Degree in Biology or Zoology and a postgraduate qualification in Vertebrate Zoology, as well as teaching and/or practical experience, and should be competent to undertake and supervise some research.

DEPARTMENT OF PUBLIC ADMINISTRATION

Lecturer/Senior Lecturer in Public Administration

The successful applicant will be required to teach one (preferably two) of the following subjects, (1) Local Government/Finance, (2) Organisation Theory and Management/Public Enterprise, (3) Personnel Administration/Financial Management, and (4) African Government and Administration/Political Science, in a programme leading to the award of a 4-year General Degree.

Candidates must possess a good Honours Degree in an appropriate discipline and a postgraduate qualification, as well as considerable interest in the practical as well as academic aspects of administration in a developing nation, and should be competent to undertake and supervise some research.

DEPARTMENT OF PSYCHOLOGY

Lecturer/Senior Lecturer in Developmental or Clinical Psychology

The successful applicant will be required to teach courses in the developmental, personality, clinical, and general introductory Psychology in a programme leading to the award of a 4-year General Degree.

Candidates must possess a good Honours Degree in Psychology and a postgraduate qualification, as well as teaching and/or practical experience in Child Developmental or Clinical Psychology, and should be competent to undertake and supervise some research.

Competitive salaries (currently under revision) will be offered to successful candidates. Part-furnished accommodation will be provided at 10% of basic salary, as well as the usual benefits for those employed on contracts (initially, two years), including air passage, medical expenses, educational allowances, and a tax-free gratuity.

Four copies of a detailed curriculum vitae containing full particulars of qualifications and experience, plus the names and addresses of three referees, should be sent to the Registrar, University of Malawi, P.O. Box 278, Zomba, by *24th March, 1984*. (14389)

The Times Higher Education Supplement

Special Book Numbers

March	30	History (I)
April	6	Biology Sciences (I)
	27	Sociology (I)
May	4	English
	11	Chemistry
	18	Philosophy
	23	Engineering
June	1	Law
	8	Psychology (I)
Sept	28	Education (II)
Oct	5	Economics (II)
	12	Environmental Sciences (II)
	19	Sociology (II)
	26	Maths & Physics (II)
Nov	2	History (II)
	9	Psychology (II)
	16	Politics
	23	Biological Sciences (II)
Dec	7	Computer Science